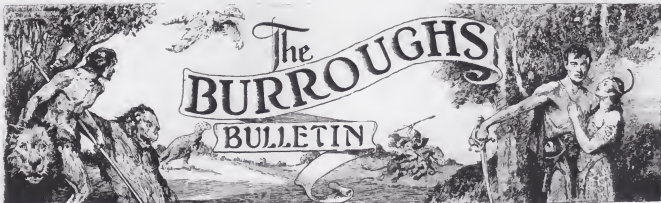


# BACK TO THE **Earth's Core**



BURROUGHS  
• #21 •  
BULLETIN

**WILLIAM GILMOUR**



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# BACK TO THE EARTH'S CORE

By William Gilmour

## CHAPTER I

### An Adventurous Prospect

On occasion, the course of my profession takes me to various cities in various parts of the country, and as time is of no particular consequence to the nature of my business, I have often driven the distance, leisurely in my automobile, in preference to any of the more expeditious methods of public conveyance. In addition to the irrelevance of the time element, the complacency of driving alone seems to have a soothing effect upon my senses to the extent that I indubitably become more thoroughly relaxed than I would be if I were sitting idly in the soft-cushioned seat of a plane, train or bus.

And so it was that when I found myself driving through down-town Peoria upon my return from a trip to the West Coast, I decided to visit a friend of mine who, through mutual interests, had long been in social contact with me by way of correspondence, but whom, unfortunately, I had never met personally.

In all probability, this decision was instrumental in forming the foundation for a chain of circumstances which led to the events I'm about to narrate, and, consequently, but for this visit, those events and their chronicling would never have occurred.

From what I had gathered from a long and cordial correspondence, Vernell W. Coriell was a man of many notable attributes, the most remarkable of which was his being nationally recognized as the foremost authority in the field of collecting and interpreting all data relative to the life and works of the renowned author, Edgar Rice Burroughs. His latest achievement in this field of endeavor was the organization of a Society dedicated to the memory of this great author whose amazing literary prowess has been duly responsible for bringing to light the many new environs which are destined to be recorded in the annals of modern history. And I was honored and privileged to be a member of this worthy organization.

Coriell, himself, answered my summons when, after a directional inquiry, I eventually arrived at his home, and I was both surprised and pleased when he instantly recognized me. My surprise was mitigated, however, when I quickly remembered having sent him a photograph in connection with one of the stories I had written.

"You have arrived at an opportune moment," he said, after greetings and salutations had been exchanged. "As a matter of fact, you were under discussion at the precise moment that you knocked upon the door."

"Ah!" I exclaimed, smiling facetiously. "That, then, explains the persistent ringing which has smitten my ears for the past hour. And what, pray, would warrant a poor traveller such as I to be a subject for discussion?"

For answer, Coriell led me into a spacious living-room in which two other men sat in earnest conversation; but with our entrance, they immediately became silent and looked up at us inquiringly. Somehow, I had a distinct impression that I already knew these men, but the unfamiliar appearance of each of their faces readily convinced me that I had never before laid eyes upon either. With my host's introduction, however, came the surge of familiarity that is bred through long association between persons of mutual interest, whether or not they have met face to face, and I immediately found myself in cordial company.

One of these men, Stanleigh B. Vinson, was undoubtedly the possessor of the largest accumulation of Burroughs material capable of being conceived in the mind of one who has not already seen it. The other man, Clarence "Bob" Hyde, was also one of the "top men" in this fascinating hobby, his collection rivaling those of Vinson and Coriell. And I? Why, I was literally a dwarf among giants! Although I have made it a project to study and interpret the writings of Mr. Burroughs and have long since acquired a more or less complete collection of his published works, I have been extremely unfortunate in obtaining much of the relative data which had appeared in newspapers and some of the more obscure periodicals of a by-gone era.

Seating myself in an unoccupied easy chair, I accepted a proffered cigarette from Vinson, touched its end to the flame of his lighter and leaned back in the soft cushions. "Now," I said, exhaling a cloud of blue smoke, "what is it that my unheralded visit seems to have interrupted?"

"We have been discussing the merits and demerits revolving around the plausibility of Mr. Burroughs' stories," said Vinson with a smile, "and Hyde, here, seems to think that there is no basis in which to accept them as being true accounts of what has actually happened."

"Listen," said Hyde, acidly; "I believe that I'm fully the equal of any of you fellows as the venerator of Burroughs and his works, and although they are the ultimate pinnacle of entertainment in the scope of imaginative fiction, I would consider it an insult to one's intelligence if the author actually expected his readers to accept the stories as being accounts of what has truly occurred."

"What makes you think that the stories are fiction?" I asked.

"Common sense," replied Hyde, curtly. "It is altogether possible that I am the 'gonest' of the 'real gone' fans, as the boys say—but I'm not a complete fool. I always have and always will contend that his characters, places and events existed only in Burroughs' vivid imagination and are in no way connected with reality."

Coriell shook his head in resignation. "As I said before," he declared; "if there is anyone who could possibly attest to the veracity of a Burroughs story, it would certainly be Gilmour. Have you read his narrative, 'At the Book's Core', Bob?" He referred to a privately published account of an incredible happening which befell me, the result of which decidedly clarified certain seeming discrepancies, and which pointed to fact rather than fiction as being the essence of Burroughs' manuscripts.\*

"Bosh!" scoffed Hyde. "Yes, I've read it, and I must say that it was a remarkable bit of hogwash." Turning to me, he said: "With all due respect to your writings—I enjoyed it very much, but do not tell me that you would have one believe that that story also is true."

I smiled. "One is certainly entitled to draw his own conclusions regarding that which he reads," I said. "I distinctly stated that I didn't expect the story to be believed, for how can one, who has lived a lifetime in the realms of reality, possibly grasp that which his normal intellect refuses to accept? Nevertheless, it is as it has been written. The story is true."

Hyde's smile was one of high amusement and his lips showed a trace of contempt as he looked first at Coriell and then Vinson, but he encour-

\*See Gridley Wave #3

tered no corroborating evidence which would tend to vindicate the obvious meaning behind his smile.

Bob Hyde's smile faded. "Oh, come now," he said scornfully; "I can understand your being carried away by the pertinent manner in which the story was written, but it is utterly preposterous to think that you would, in truth, believe such drivel. I, too, have been greatly moved by the profound realism ascribed to the genius of a master of fiction, especially in the case of Edgar Rice Burroughs, but would you have me believe that if one were to begin digging a hole in his back yard, he would eventually emerge into Pellucidar?"

Vinson laughed. "Certainly not," he said. "I don't believe his life-span would be quite long enough to complete such an excavation."

"Five hundred miles straight down," added Coriell, his eyes twinkling capriciously. "Some hole. I'm afraid you'd need lots of help, Bob."

Bob Hyde looked hurt. "Please dispense with the jokes," he said. "You know very well what I meant."

"Speaking of Pellucidar," said Coriell; "I have long entertained a definite fancy to visit this land of the noonday sun, if—"

"Oh, no!" ejaculated Hyde. "This is the last straw! Now I have heard everything!"

"If," continued Coriell, ignoring our colleague's railery, "I could persuade several others to accompany me and to help finance such an expedition."

"How would you go?" demanded Hyde, sarcastically. "By the next scheduled electric mole?"

"No, buddy boy, I think they went out of business," bantered Coriell. "However, I'm serious about this thing. We could try for one of the openings at the poles. We all know they exist."

"I imagine," said Vinson, "that at one time or another we have all had a like fancy, including me. I'm sure that if I had but known beforehand, I would have made every effort to join Jason Gridley's expedition to the inner world in the dirigible, O-220. He found the North Polar opening, which leaves no doubt that that one, at least, exists."

Coriell nodded. "But if we were to undertake such a journey," he said, "it would have to be by another means than that by which Gridley reached the inner world. We all know that the day of the dirigible has long since passed into oblivion."

"How about the conventional cabin-type airplane?" suggested Vinson, visibly moved and utterly enthusiastic.

"Or a helicopter," I added. "No doubt you fellows have heard of Jonathan Standish, the noted British inventor, and of the eminent success he has had in perfecting an engine capable of attaining a maximum distance on a relatively small amount of fuel. I am personally acquainted with Standish, and the last letter I received from him stated that he had recently purchased a large helicopter in which he installed his remarkable engine—a craft which would be ideal for such a venture as you have been contemplating. It is quite possible that I may be able to interest him in the project, being that he is something of an adventurer himself."

"Excellent!" exclaimed Coriell. "Then I take it that we three are in this together. How about you, Bob?" he asked of Hyde. "Will you come?"

"You couldn't keep me out of it with a team of mules," cried Hyde. "Certainly, I'll come. It will be worth the effort just to see your faces when you finally realize that you've been wasting your time in something that is pure fantasy. Ho, for Pellucidar, the land of eternal day! Where the behemoth roam, and the thag and the antelope play." Then, shaking his head vehemently, he muttered: "Coriell's Folly would be a better way of expressing it."

It was decided that we should try for the North

Polar opening to the inner world as did the Gridley expedition years before, and, at Coriell's suggestion, I telephoned the local Western Union office, sending a lengthy cablegram to Standish in which I explained the nature of the proposed trip and of our need for enlisting his services.

Hours later, I received a reply to which I beamed with satisfaction. It read as follows: YOUR PROPOSED EXPEDITION INTRIGUES ME. WILL ARRIVE SCRANTON IN HELICOPTER ON SEVENTEENTH. MAKE PREPARATIONS.

The next day I took my leave, my head reeling at the sudden turn of events which my casual visit in Illinois had induced. The others agreed to proceed to my home the following week, from where we would begin our journey upon the arrival of Standish.

I embraced no regrets over our somewhat hastily conceived decision to attempt to re-discover the northern entrance to the inner world of Pellucidar. I harbored no doubts relevant to the existence of this vast world within a world and of its openings at both poles, and I was fully confident that we would find the northern access as did the Gridley party before us. So, with my mind refulgent in vivid pictures of primeval forests, huge dinosaurs, and of savage cave men, I arrived home and immediately began preparing for the coming venture.

## CHAPTER II

### Into Pellucidar

"Do you see anything?" asked Vinson of Standish, as the former thrust his head into the pilot's compartment of the helicopter.

"Ice," replied Standish; "and plenty of it."

"Same back here," said Vinson. "If we find the opening at all, it's going to be by sheer luck."

Standish nodded. "If it exists, as you fellows contend," he said, "it's probably so well hidden that we could pass over it and still not see it."

Vinson returned to his seat in the main cabin where the rest of our company were diligently scanning the surface of the frozen wastes below.

"Nothing up front," he reported. "Jon is of the same opinion as I. The opening is unquestionably in such a secluded position that we could pass over it without our being aware that it is there."

"We're all of that opinion, I believe," I said.

After a hasty and somewhat secretive departure from the airport at Scranton, where Jon Standish had arrived as scheduled in his aircraft, upon both sides of the prow of which was emblazoned in bright scarlet lettering: BONNIE PRINCE CHARLIE, we had reached the vicinity of 85 north latitude and 170 east longitude where it was believed that the north polar opening lay. At once we took up the task of scanning the vast, frozen reaches of the Polar Sea for any unusual indentation which would prove to be the great orifice we sought. As near to the surface as possible, Jon Standish guided his craft through great canyons and ravines formed by the juncture of two or more gigantic ice-floes, but nothing of which we saw indicated any form of passageway which would lead to anywhere but sure death in an ice-bound tomb.

For two weeks, most of the daylight hours were spent in constant flight, searching, ever searching, but to no avail. Vinson and Standish were becoming more than a little apprehensive regarding the credulity of the whole principle; and Bob Hyde persistently played us with grinning expressions of rebuke, much in the manner of one who was having the proverbial last laugh. My sentiments, too, were at a low ebb, much of my former enthusiasm being lost in the uniform consistency of the white expanse below. Coriell, on the other hand, still retained much of the optimistic fervor he had displayed since the inception of our venture. In contrast to the rest of us,

who were content to scan the frozen surface from a single stationary position, he would nervously traverse the full length of the ship, peering for some time through each window and then move into the pilot's compartment where he would scan the horizon ahead with a pair of powerful binoculars. "I'm sure that the opening is somewhere hereabouts," I heard him say to Standish. "It's only a matter of time until we find it."

But time was beginning to run out for us. Although our fuel supply was extremely ample, the store of food provisions was rapidly nearing depletion. Coriell suggested that we try bagging a walrus or polar bear to supplement our diet, but the rest of us were now convinced that it would only tend to prolong the state of despondency which had descended upon us. At last we decided to abandon the venture entirely, and Standish swung the BONNIE PRINCE CHARLIE in a great circle and bore due north on a course that would take us directly across the pole to the 80 west meridian and home.

Suddenly, Coriell, who was then sitting next to our pilot, pointed off to the left.

"Try that area over there as a final effort," he said, his extended arm indicating a vast ridge of ice which covered nearly the entire western horizon. "It seems to me that we haven't been there before."

"We have," said Standish. "We crossed that ridge only yesterday. You are looking at it from a different angle which would tend to make it appear strange to you; but if you wish, I will skirt its edge and proceed on our course parallel to it."

He swung the ship about until the ridge was directly in front; and as we neared it, Coriell suddenly stiffened.

"We've found it!" he cried. "I'm positive that this is the opening! Keep going straight ahead, Jon!"

Hearing Coriell's sudden flurry of excitement, we all crowded the pilot's compartment and scanned the white terrain before us.

"Better veer off, Jon," observed Bob Hyde. "We're getting too close to that ridge for comfort."

"Veer off, nothing!" shouted Coriell, swinging in his seat to face Hyde. "This is it, my doubting friend, this is it!"

"This is what?" demanded Hyde. "All I can see is a great wall of ice which we will certainly crash into if we keep on."

"Wait," replied Coriell, and nudging Standish's arm: "Take her a little lower, Jon," he said; "I'm afraid we're a little too high."

Standish lowered the ship until we were not much more than a hundred feet above the surface of the solid ice pack and presently the BONNIE PRINCE CHARLIE was in close proximity with the great ridge; but as we slowly moved forward, it didn't seem to get any closer to us. It rose directly ahead, towering over the ship like a giant shroud and, to our amazement, it seemed to get further away! Finally it faded from view entirely and all that remained to be seen was the barren ice field below and a clear sky ahead. Immediately a wave of ecstatic emotions engulfed my senses. Was I looking at the sky of the world at the Earth's core?

The thrilling sensation which pervaded my being was further enhanced a moment later when the voice of Standish interposed upon my reverie.

"Land!" he shouted. "There's land ahead!"

I was now positive that the sky above was that of the inner world as I looked ahead and saw the white expanse terminating at the lower slopes of a sparsely wooded knoll dotted with patches of ice and snow. The land mass extended to left and right, blending in the distance with the vast field of ice.

Soon we were cruising over the desolate land area and all traces of ice and snow disappeared

in our wake.

"Look!" cried Vinson, pointing ahead. His extended forefinger indicated the upper rim of a large, shining disk which was topping the horizon directly to our front. As the ship progressed further, this great ball of fire emerged from below the horizon and slowly climbed the sky. No one spoke. We could do nothing but stare in open-mouthed awe.

"The sun of Pellucidar," gasped Vinson at length, and turning, he hurried to a window at the rear of the ship. "Come here, you fellows!" he cried. "Take a look at this!"

Hyde, Coriell and I each sprang to a window in the rear of the helicopter. There behind us, and about to sink below the horizon, was the small, red orb of our own sun.

"Two suns!" exclaimed Hyde, incredulously.

"I never would have believed it."

The BONNIE PRINCE CHARLIE continued on its southerly course and our eyes took in the rapidly changing scene below. From barren wasteland there unfolded before us the far-reaching panorama that was prolific and virulent Pellucidar. Below us a dense forest stretched far and wide upon each side of the ship's course; and beyond, we could see a gently rolling plain studded with shrubbery and small clumps of trees and through which a number of small streams wound placidly. Great herds of animal life embellished the landscape, grazing unperturbed in the lush grasses.

"There is our fresh meat," said Coriell. "I'll ask Jon to land at the forest edge for I do believe I could go for a thick, juicy steak. How about you fellows?" and without waiting for an answer he moved into the pilot's compartment.

We were all rather starved for fresh meat and it was with a sense of exhilaration when, a few moments later, I saw that the ship hovered over the plain and commenced dropping gently to earth.

We had removed our outer garments of fur which had been necessitated by the intense cold that penetrated the ship during our long search, our apparel now consisting of khaki shirts and breeches, and laced leather knee-boots. Coriell, Vinson and I had donned sun helmets of the pith variety while Standish and Hyde retained the wide-brimmed felt hats they had worn originally.

As the BONNIE PRINCE CHARLIE settled to earth, Coriell threw open the door and leaped to the ground. Crouching, he ran from underneath the whirling horizontal propeller blades until he was some forty feet from the ship and, turning, he motioned the rest of us to follow. "Come on," he shouted jubilantly. "Don't be shy. Get yourselves out here and let this glorious sun put new life into your cramped bones. It feels great!"

Standish cut the engine and with a wheezing sigh the great blades above became stationary. Joining us by the open doorway, he motioned us to precede himself to the ground and we sauntered over to where Coriell was standing.

Bob Hyde was nonplussed. His jaw had hung downward since he had become aware of the two suns and realized that we were actually entering Pellucidar.

"What do you think now, Bob?" smiled Vinson.

"I never would have believed it," was all he could say.

The sun, much larger than ours of the outer crust, was directly overhead where it would be if we were to stay a lifetime in this timeless world. In the distance ahead I saw the great plain stretching on and on to merge with another great forest which extended onward, gradually becoming hazy and then blending into the sky above.

"This is indeed Pellucidar," conceded Hyde, as his eyes followed the definitely up-curving surface of the landscape. "Never would I have deemed its existence possible; yet, here it is, and here we are."

"I think," said Standish, "that we ought to try to bag some game. Even though the noise of the

ship seems to have driven it off, it would be my guess that it has not gone far. From what I observed from above, it's certain that we shall not lack for fresh meat, if anything else. My, I never saw such an abundance of game!"

Returning to the ship, we secured rifles and ammunition after each of us had first strapped about his waist a belt and holster containing a forty-five caliber automatic pistol, and as soon as everyone had satisfactorily checked the firing action of his weapons, we set off through the tall grass to procure meat.

We had not gone far when, upon emerging from a small thicket of shrubs and trees, we espied a herd of antelope grazing near the banks of a swift-moving stream a short distance away.

All in a single motion, Bob Hyde threw his rifle to his shoulder and squeezed off a shot. To the astonishment of the rest of us, we saw a fine young buck drop instantly in its tracks, and as the remainder of the herd scattered, Hyde hurried to where the carcass lay and quite effortlessly picked it up and threw it over his shoulders.

"How in the name of heaven did you learn to shoot like that?" I asked of him as we walked back to the vicinity of the BONNIE PRINCE CHARLIE.

"Practice," smiled Hyde, modestly. "I have my own private shooting range at home which I have utilized ever since I was old enough to handle a gun, which, naturally enough, leaves me with the dubious distinction of being something of a fair shot."

"A fair shot!" I exclaimed. "Why, that was the most remarkable exhibition of marksmanship I have ever witnessed; and," I added smilingly, "it sure does make me feel better to know that you're here. Are you equally adept with that thing there?" I pointed a finger at the pistol on his hip.

"I have done some shooting with a pistol, also," he muttered.

I smiled and nodded knowingly.

Soon we were grilling choice cuts of meat over an open fire and the savory aroma which wafted into my nostrils made my mouth water. I could see that the others were similarly affected and it was with great relish when we sank our teeth into the charred, succulent flesh.

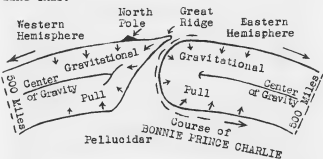
"Tell me, Vern," I asked of Coriell, between mouthfuls. "How did you know that that ridge was the opening into Pellucidar?"

"I didn't, really," he replied; "but I figured that if the opening existed—a fact, incidentally, which I never doubted—it would be located near a vast ridge such as that where we found it."

"I don't quite get it," said Hyde, shaking his head in perplexity. "If we descended into Pellucidar—and I have no doubts that we did—how is it that we constantly maintained a horizontal course? It didn't seem to incline downward at all. How do you account for this?"

"Gravity," replied Coriell simply.

"I think I can explain it," said Vinson, picking up a sharp-pointed branch which lay nearby; and, after smoothing a portion of the ground before him, he drew a rough illustration which looked something like this:



"You can see," exclaimed Vinson, "that it would be impossible to sense our descent, because we

were following the curvature of the opening in direct opposition to the force of gravity. The opening could only be entered from one direction. Coming from another direction, we would inadvertently pass right over it without our being cognizant that it was there."

The others nodded acknowledgement, for the simple etching upon the ground certainly made a great deal of sense. I, too, had been at a loss to understand the exact nature of our ingress into the inner world, but upon inspection of Vinson's quaint portrayal of the phenomenon, the confused feeling which had permeated my faculty of reason was alleviated considerably.

The meal over, Standish suggested that we get some much needed rest—something which we all had greatly neglected during the past two weeks. He had worked out a tentative schedule which would require one of our party to stay awake on a two-hour patrol around the perimeter of the BONNIE PRINCE CHARLIE, and the first tour of duty fell to Vinson.

Following the others into the ship, I sought my bunk and immediately fell asleep.

### CHAPTER III

#### Tragedy

When I awoke, my wrist-watch was stopped at eleven minutes past three. Sitting up, I noticed that the others were still asleep and that Vinson's bunk was still unoccupied. As I felt very much refreshed, I somehow sensed that I had slept longer than the allotted four hours before beginning the third watch of the schedule. Hyde, who was to have relieved Vinson, was still sleeping peacefully, and I wondered if Stan was taking it upon himself to stand all of our tours of guard duty. Standish had given him his wrist-watch before retiring, and as mine was the only other time-piece among us, I was immediately confronted with the same perplexing problem of time-lapse which had plagued our predecessors in this timeless land. I recalled that I had not wound my wrist-watch before retiring—a habit generally prevalent with me—and I inwardly reproached myself as I moved to the ship's door and stepped outside.

Stan Vinson was nowhere in sight. Not a sound broke the stillness of my surroundings. Not the slightest breeze disturbed a blade of the tall grasses around the ship. My apprehension mounting, I ran quickly around the ship's prow and scanned the area on the other side, but nothing but the same monotonous serenity met my eyes. Only the slight movement of countless animals grazing in the distance imparted animation to the scene before me. Immediately all sorts of portentous implications ran rampant through my mind, for, with all certainty, Stan would not on his own accord thus leave the ship unguarded. Could it be possible that he had sat down in the tall grasses and had unintentionally fallen asleep? With this thought, I quickly mounted the ship's fuselage until I was standing at its highest point upon the housing of the great horizontal propeller blades. I scanned intently the area upon all sides of the ship but as far as I could see there was no break in the seeming solidity of the grasses which would indicate that Vinson was lying asleep therein. Now, fully aware that something had happened, I sprang to the ground and re-entered the ship.

In turn, I shook each of the others until all were awake. "Vinson's gone," I said. "I awoke a few minutes ago feeling very well rested and left the ship only to see that he is nowhere hereabouts. My watch is stopped, as I foolishly forgot to wind it, so I have no idea how long it has been since we retired. I'm certain that we have slept the clock around, however."

The others, also, were equally sure that a great deal of time had elapsed for each said that

he felt as though he had had a full measure of slumber.

"What could have happened to him?" asked Bob Hyde of me. "Are you quite sure of what you are saying?"

"Let's take a look around the area," suggested Coriell. "It's possible that he may have fallen asleep in the tall grasses. We were all utterly fatigued, you know."

I shook my head dubiously. "I thought the same thing," I said, "and I scanned the area from the ship's superstructure, but I saw nothing but a solid sea of grass."

"Maybe he fell asleep," said Standish, "at a greater distance from the ship than would be visible even from the superstructure and it is possible that you may have missed seeing him. Come on, we'll conduct a systematic search of the area."

He picked up his rifle and sprang lightly from the door, the rest of us following his example.

As Coriell cleared the doorway, he cupped his hands to his mouth and began calling Vinson's name at the top of his voice. He circled the ship emitting intermittent shouts but no answering response rewarded his efforts.

"If he is lying in the grass, he's a remarkably sound sleeper," muttered Hyde.

"Spread out and work in a circle extending outward from the ship," directed Standish. "If he is in the grasses, we'll undoubtedly find him."

Forming a line with some ten feet of space between each man, we commenced walking in a circular path around the BONNIE PRINCE CHARLIE, gradually moving further away from her with each cycle. We were some fifty yards from the ship when Coriell bent over and extracted a rifle from the concealing grasses. "Look," he said in a low voice, holding it at arm's length so everyone could see it.

"Stan's rifle," said Hyde in a voice that wavered slightly. "He must have been attacked and carried off forcibly."

"There's more to it than that," declared Coriell. "How is it that he didn't cry out for help if he were attacked? He couldn't have done so, for if he did, I think that one of us would have heard him. In this awful stillness the resounding factor of one's voice reaches almost a deafening pitch, as you have heard from my shouting. Furthermore, I believe Stan would have hastened to inform us upon the first sign of impending trouble. And even if it so befell that his retreat to the ship was cut off, he would then have resorted to firing a warning shot to say the least—a recourse which most assuredly would have wakened us all. No," he added with finality; "there is a more sinister aspect behind this than his merely being attacked."

Indeed, Coriell's exposition had a convincing effect upon us all. Firmly confident that some dire calamity had befallen Vinson, we returned to the ship with the weight of a world upon our shoulders—in distinct contrast to our light-heartedness of some hours before.

I sat down in the open doorway of the ship and looked at the others inquiringly. "What's to be done?" I demanded.

Standish toyed at the turf with the toe of his boot. "Stan left the ship's vicinity," he said, "through no voluntary impulse—that's a foregone certainty. Whatever befell him must have taken place at least ten hours ago, as we are all certain that we slept the clock around. It would be foolhardy to attempt a search on foot as there is no indication of the direction in which he went. Moreover, it would be doubly foolhardy to split up our party and begin a separate search. It is too dangerous to say the least, and doubtless, we'd all become lost. We must remain together at all costs and the best way of accomplishing this, and to locate Stan in the bargain, would be to try and spot him from the air."

Coriell nodded. "That would be our only alternative," he agreed. "I noticed that the grasses were undisturbed beyond the point where I found Stan's rifle. It is quite uncanny—as though he vanished into thin air."

I must admit that Coriell's blunt hypothesis had a weird ring of truth about it, for I, too, had noticed that not even as much as a broken blade of grass was in evidence to indicate that Stan had been forcibly carried off through the tall grasses and away from the point where we had found his weapon. However, I was quite certain that nothing bordering the supernatural had descended upon Vinson and that whatever had happened had been of material substance. Even in this timeless land of unknown phenomena, I refused to let my faculties be diverted from the state of normalcy by any such hypothetical contingencies which seemed to deviate from the course of logic.

The BONNIE PRINCE CHARLIE rose slowly into the air and Standish employed the same tactics that we had used on foot. He directed the ship on an ever-widening circle at a height which barely cleared the tops of the tallest trees in the area; and, as our progress extended outward, countless herbivora fled before us in a futile effort to outrun the ship and scampered madly in all directions as we passed overhead.

We had covered a radius of perhaps two miles from our starting point when I suddenly spotted a khaki-colored object nestled amid the dense foliage of the uppermost reaches of one of a group of trees which lay below, but at some distance from my vantage point on the starboard side of the craft. It looked remarkably like a pilot's helmet such as those worn by Vinson, Coriell and myself, but I could not be sure so, for the present, I said nothing of the matter and the clump of trees passed on to the right and out of my range of vision.

In a great circle, the BONNIE PRINCE CHARLIE swept over the area until I saw the trees again coming to meet us, but this time they were almost directly below the ship's course. Motioning Bob Hyde and Coriell to follow, I hurried into the pilot's compartment and brought the matter to the attention of Standish, and as the ship neared the clump, he reduced its forward progress and then hovered above the tree in question.

"By George!" he cried impulsively, after a momentary inspection. "It IS a sun helmet! How the devil do you suppose it got into the treetop?"

"Let us see if we can retrieve it," I proposed. "Then we can be absolutely sure that it is Vinson's." Inwardly, I had no doubts concerning the ownership of the helmet for I was equally certain that the inhabitants of this savage world had not yet reached the stage in which they had begun to manufacture sun helmets of the style and variety as those worn by us.

"Take the ship down slightly, Jon," directed Coriell. "I may be able to reach it from the doorway."

We re-entered the main cabin and Coriell opened the door. He then regulated Standish's movement of the ship until the open doorway was directly above the foliage upon which the helmet lay. Coriell prostrated himself upon the floor in front of the doorway and, edging far outward, he reached down and snatched the helmet from the treetop. Indeed it was that which had been worn by Stan Vinson, but how it had attained its position in the highest reaches of the tree, we were at a loss to know—that is, Hyde and I were at a loss. From Coriell's manner, I could see that he was inwardly disturbed; and when he suddenly turned his back and stood staring out of the still open doorway, I knew that he had formed an opinion as to the fate of our comrade.

"Tell us, Vern," I said simply, laying my hand upon his shoulder.

He closed the door of the ship, turned and faced

Hyde and me resolutely. "You both know, of course," he said, in a husky voice, "that the fearsome denizens of Pellucidar are not all restricted to the surface of the land or the depths of the seas. Many of its creatures seek their prey by swooping down upon it from the air, among which is the gigantic flying reptile—"

"A thipdar!" cried Hyde. "That would explain everything!"

Coriell nodded. "Stan couldn't have had a chance to give warning," he said. "The creature must have suddenly swooped down from above when his back was turned and swept him into the air with such rapidity that his rifle was jarred from his grasp. His helmet fell off later, landing in the treetop.

"Do you think there may be a chance that he later escaped the thipdar's clutches?" asked Hyde. "He still had his pistol."

Coriell smiled wanly. "From the picture my mind construes of a thipdar," he said, "Stan might just as well have had a pop-gun, for all the good it would do."

"But we just can't give up hope," I cried. "There is always the chance that he may have survived. I, for one, am willing to start a search which will cover the length and breadth of all Pellucidar if necessary. Until we find him, or evidence that he is dead, I shall not be satisfied. I'll not return home without either."

"Nor I," said Hyde.

Coriell's face brightened and he cast a look of approval at Hyde and me.

"Nor I!" he exclaimed in a determined manner. "Come, let us acquaint Jon with our conclusions."

When we had apprised Standish of our reasoning and of our intentions, his sentiments were instantly apparent. "We are wasting our time circling the area," he said. "The thing to do is to return to where we found Stan's rifle and then proceed on a straight line back toward this clump of trees lying below. By maintaining this course we may, with a certain amount of assurance, pursue the same route taken by the thipdar. I am quite sure that the creature would assume a direct course to its destination."

We readily agreed that this would be the natural tendency conforming to the fixed purpose of a beast of prey which had successfully seized its quarry, and it was a grim trio who stood by as Standish quickly brought the ship back to the point of our commencement. Then, at full speed, the BONNIE PRINCE CHARLIE shot through the air, directly toward the clump of trees where Stan's helmet was found.

Soon the area was left far in our wake. Over river, lake, plain and forest flew the BONNIE PRINCE CHARLIE until presently there descended from the haze in the distance, what seemed to be a great range of mountains. From the remoteness of our position, the up-curving landscape imparted to our vision nothing more than a wide-spread series of ruts and grooves stretching out beyond the smoothness of the terrain before it. No peaks were silhouetted against the sky, but from what I knew of the mountains of Pellucidar, their appearance from a distance greatly belied their true eminence.

Presently, we crossed the lower regions of the range and the scene below began to take a more awe-inspiring form. Towering peaks loomed before us. Canyons of an appalling depth burrowed far to the ground below, giving us a clear impression of the tremendous height of the mountains over which we flew.

Nowhere was there any indication of a thipdar's lair. I had understood that these creatures inhabited the lofty mountain crags of Pellucidar, but my presumption that this was the case was being rapidly recanted in my mind, for not one did we see, either in its abode or in flight. Occasional glimpses we had of other forms of animal life, including the mighty cave bear which

we had no trouble recognizing from its great bulk.

We saw no sign of human habitation, but this was not unusual for I knew that, with few exceptions, the scattered communities of those who populated this timeless land did not lie in the mountain elevations, but were situated in the lowlands.

God knows how much time was spent in the air over that vast range. Our former enthusiasm at the first sight of the perpetual noonday sun had now turned into an exasperating ordeal of deception. It was maddening to see it hanging above, never varying, never wavering, never moving across the sky to sink below the horizon into a blessed state of darkness—and most of all—time perception.

Hyde, Coriell and I did most of our sleeping while the ship was in flight, and when our pilot, who seemed to be tireless, eventually found the need for rest, he would set the ship down, generally in a valley through which ran one or more rushing mountain streams, and all of which were literally teeming with trout. With an improvised net, we caught more than enough of the fish which, when broiled over an open fire, tasted better than the full course which went with pheasant-under-glass at the Ritz. At other times, we landed upon a mesa far up in the mountain fastness and while Standish slept, Coriell, Hyde and I had no trouble bagging a mountain sheep or that species of antelope which dwells in the mountains of the inner world.

Guessing roughly, I would say that several weeks were consumed in scouring that vast mountain range. Finally, we were convinced that if the thipdar had brought Vinson into the mountains at all, it had doubtless taken him on and beyond and into some other region. So, concluding that further search of the area would be of no practical worth, we crossed the mountains and saw, lying before us, a far-reaching fertile valley, at the further extremity of which was what appeared to be an immense sea of open water, but none of us could be sure. Far to the right was an area much darker in hue than that which preceded it. This dark area extended for some distance out into that which looked like an open sea, where it terminated abruptly and concentrically as the adjacent area beyond became bright again.

Suddenly, and without the slightest warning, we all plunged to the roof of the cabin. It was as though the BONNIE PRINCE CHARLIE had turned turtle instantly.

## CHAPTER IV

### A New World

As I hit the roof of the cabin I had a sensation that the ship was falling to earth, and a quick glance into the pilot's compartment revealed Standish, in an inverse position, feverishly fighting with the ship's controls. Fortunately, he always had made it a practice to utilize his safety belt while operating the ship for, doubtless, had he not been securely fastened, he would have been thrown from his seat and away from the helm. As it were, he hung head downward, held to his seat only by the straps across his thighs.

"Hang on!" he shouted. "I must get the ship off its back and into a power dive—if I can."

"What has happened?" I yelled.

"I don't know," Standish answered. "The ship just—" I saw him straining at the control, pulling it back while, at the same time, increasing the throttle. Holding on to anything with which my fingers came in contact, I presently felt the ship nosing over and I was aware of being in a screaming power dive. Suddenly my innards seemed to rush upwards as the ship came out of its plunge and righted itself.

Once again on the floor of the cabin, I saw



that the others had fared no better than I, but Hyde was grimacing as if in pain as he massaged his shoulder.

"Are you hurt?" I asked.

He shook his head. "Just a bump," he replied. "Nothing to fret about."

Glancing from a window, I saw that the ship was no more than fifty feet from the ground. Just in time, I thought, had Standish brought it on an even keel.

The fact that we had been saved by a narrow margin was merely the abstract reflection of my subconscious mind for, with my first glance at the scene below, there came an inundation of sensory impulses inharmonious to all previous conception of Pellucidar's surrounding landscape. Something was profoundly different, but just what it was, I couldn't quite grasp.

Standish decelerated the ship as we approached a small glade and, moments later, he brought it to earth and cut the engine.

"I'll have to give the ship the once over," he announced upon entering the main cabin. "I'm afraid she isn't equipped for spasms such as those she just weathered." He reeled, and grasped a seat-back for support.

"What happened?" asked Hyde.

"I'm completely mystified," replied Standish. "I had the ship on a perfectly level course, and then we were flying upside down—it was as though the force of gravity suddenly shifted to the opposite extreme." He again staggered drunkenly. "I can't seem to keep my balance," he added.

"Did any of you fellows notice anything strange about the landscape?" I asked, blandly.

"Not I," said Hyde, rubbing his shoulder again. "I had my hands full just trying to hang on. Why? Should there be anything strange about it?"

"There shouldn't," I replied; "but there is. Just what it is, I don't rightly know. Come on, let's get outside and maybe I'll be able to put my finger on what it is that bothers me." I opened the door and leaped outward.

To my utter surprise, I went sailing through the air and landed twenty feet off. My momentum carried me to my knees and over upon my face, and I rolled, head over heels, for another ten feet before coming to a halt. Sitting up, I looked back at the ship and saw my companions crowding the doorway, regarding me in wide-eyed astonishment. I regained my feet rather cautiously, but upon stepping out, I again carried through the air but this time for a distance of only about six or seven feet. I came to earth swinging my arms wildly to establish my equilibrium and when I was once again stationary, I looked at the others and shrugged my shoulders in perplexity. If you have ever seen an inexperienced person trying to walk upon a trampoline or upon the huge net provided for the safety of the circus aerialist, it will then exemplify the inartistic maneuvers I had executed. I must have presented a queer and mirth-provoking sight to my companions and I honestly believe that they would have burst into laughter but for the seriousness of the situation.

However, after a number of awkward steps, I managed to return to the ship where I stood with my back to the fuselage, looking up at the others balefully.

"What's going on here?" demanded Hyde, incredulously. "Is this what you meant by the strangeness of the landscape?"

"No, no," I was quick to reply. "I knew nothing of this. How could I? I'm bewildered fully as much as any of you. I meant the general appearance of the landscape—not its peculiar attributes. Take a look around and tell me what you see."

Now, for the first time, my companions were able to more closely observe the essential features of the surrounding countryside.

"I see nothing unusual," said Hyde, after

his eyes had swept the area.

"Look at the ground directly in front of you," I said; "and then let your eyes follow it outward for as far as you can see it."

I watched closely as the others did as I requested. Coriell was the first to apply any significance to the scene he saw before him.

"The horizon!" he exclaimed. "There is no such thing in Pellucidar and yet, my eyes perceive a distinct line where the earth and sky seemingly meet."

"But it's impossible!" cried Hyde as his eyes followed, from left to right, the long earth-sky line which lay clearly discernible in the distance. "There must be some explanation to account for that what we see."

"How would you explain it, then?" I asked.

"I didn't say that I could explain it," Bob Hyde replied; "but there is certainly some unknown abstraction which is causing what our eyes perceive to be a horizon. We know that there just can't be one, for it is utterly extraneous to the composition of Pellucidar's surface."

"And I agree," I rejoined; "but there is definitely nothing illusory about what we see. The horizon is there, clearly distinct and—"

"Hold on, a minute," interrupted Coriell. "There is one place in Pellucidar where conditions such as these would exist; and that would be upon its satellite, which, if you recall, revolves around the sun supposedly at only a mile above the surface of the ground."

"Exactly," I agreed, nodding my head in satisfaction; "and that is precisely where we are. Look!" I pointed aloft at the great sun of Pellucidar which heretofore had been on a true perpendicular plane above us. It now hung in the sky about thirty degrees from zenith.

Hyde slowly nodded his head in understanding. "It must be true," he said; "for it would also account for your uncontrollable steps and lack of balance. The satellite's gravitational pull is doubtless many times less than that of Pellucidar's surface. We must now be a number of times lighter than our true weight."

"Correct," I said. "And if you let your mind dwell upon the subject, you will see that we will continue to become lighter as the sun moves toward the horizon. With the coming of darkness, I imagine we'll be practically weightless, seeing as to how easily I flew through the air a short time ago—a time which corresponds with mid-afternoon, I would say," and I glanced at the sun's position in the sky.

Hyde looked at me quizzically. "What do you mean?" he demanded. "Why should our weight diminish with the coming of darkness?"

I smiled languidly. "I only said that I imagined it would," I replied. "Unfortunately, theory is nothing more than the antecedent of truth; but from a theoretical standpoint, I would say that I am correct. As you probably know, the satellite revolves upon an axis which lies parallel to the surface of Pellucidar. It circles the sun in conjunction with the Earth's turning upon its own axis—thus, you have the reason why the satellite's shadow is permanently cast upon one section of Pellucidar's surface—the section known to Pellucidarians as Thuria, The Land of Awful Shadow. This undoubtedly was the dark area we saw in the distance just before the ship flipped over upon its back—an occurrence which actually didn't happen at all. We simply entered into the satellite's gravitational field."

"This area here is on the opposite side of the satellite from that which is now facing The Land of Awful Shadow, consequently we are affected only by its normal gravitational pull, but as the satellite revolves upon its axis, the sun sinks lower and lower toward one horizon while the surface of Pellucidar commences to rise upon the other, bringing with it, the powerful gravitational force of the Earth. With the satellite's normally

low gravitational pull acting in opposition to the gradual increase from the surface of Pellucidar, wouldn't it be quite natural to assume that there would be a pronounced magnetic effect upon that part of the satellite's surface which is then facing The Land of Awful Shadow?"

"Yes, I see what you mean," said Hyde, after a few moments' thought; "but what keeps the satellite in its orbit? Wouldn't a celestial body, floating only a mile above the surface, be so affected by the gravitational pull of the Earth that it would be drawn from its orbit to the ground below?"

I shrugged my shoulders impassively. "Normally, it would," I said; "but I am only offering theories concerning the satellite's terrestrial properties. To the unknown qualities which keep it in its orbit, I could not even speculate upon."

During my recital, I could see that Standish was quite bewildered. He was not the true student of history as were the rest of us and, consequently, he knew little or nothing of the subject I had tried to expound.

"If it is as you say, and we have landed upon a satellite," he said, "it must then have been invisible, for I saw nothing to indicate that we were approaching it."

"In truth, it really would be invisible," said Coriell. "It can only be seen from The Land of Awful Shadow or its near vicinity. From any other area, it would appear as our own moon does in the daytime—practically non-existent."

"Well, be that as it may," said Standish, resignedly, "I must thoroughly check the ship." He sat down in the open doorway, placed his feet firmly upon the ground and stood erect. "But," he added, "for the life of me I fail to see how we are going to amble properly on this terrain. I'm afraid to take a step."

Coriell stepped to the turf and, to our surprise, went walking off in a normal manner and turned when he was a hundred feet away. He then sprang forward, sailing through the air for fifty feet and with one bound, somersaulted the remaining distance to land erect at the ship.

"How do you do it?" asked Standish in amazement.

Coriell smiled. "My muscles are attuned to this sort of stuff from a lifetime of practice," he said. "At one time, I made my living by performing feats of agility upon the high wire. This is child's play, and there is really nothing to it if you set your mind to the task. All it would take is a little practice."

Standish stepped out, but, as I had done, he landed upon his face after a series of ungainly contortions. It was likewise when Hyde made an effort. Coriell then began to explain the technique of applying a little psychology to the process and from this we found our efforts to be more rewarding. By putting into practice the science of muscular co-ordination, soon we were all able to walk quite normally.

Immediately Standish had mastered the problem of walking, he commenced an inspection of the BONNIE PRINCE CHARLIE and shortly thereafter he discovered that a major repair to the engine would be in the offing before he dared take to the air again. He declined our help as he began dismantling the engine and we decided to put our time to use by exploring the surrounding area.

We had landed in a small glade upon one side of which was the outer extremity of a dense forest which lay beyond, dark and dismal and matted with verdurous undergrowth. The remainder of our surroundings was a rolling park-like meadow, studded with trees of various forms and varieties.

"Go ahead and explore," Standish said, when we had made our intentions known to him, "but remember that one of our party being lost is sufficient reason not to wander too far afield."

Hyde, Coriell and I started off across the meadow but we had not gone far when, at a sudden thought, I brought our trek to a halt with a gesture of the arm.

"I think," I said, "that one of us should return to the ship. We know absolutely nothing of the territory upon which we have landed. Who knows what dangers lie within its limits. Jon is going to be quite busy for some time and I'm sure that none of us would like to see any unforeseen mishap befall him as he goes about his work. I think one of us should remain to guard the ship."

"You are quite right," said Bob Hyde. "You fellows go ahead. I'll go back," and without waiting to debate the matter, he set off in the direction of the ship.

Coriell and I resumed our steps until we came to the meadow's end which bordered an area strewn with rocks and boulders. To one side of the area, a small ravine led off at right angles to the course we were pursuing, and rather than proceeding across the more harrowing, boulder-infested way in front of us, we swung off down the ravine.

"The satellite seems to be devoid of life," I remarked. "Not even a bird or rodent is manifested. Have you noticed?"

"Yes," replied Coriell; "and I'd say that this was a bit unusual for, by all standards, this planetoid is definitely suitable to the evolution of life-forms. It certainly is strange."

We continued down the ravine, noting with interest, the various rock formations and the stratum of soil upon which they lay. The appearance of these formations imparted the impression that great slabs of rock had recently been quarried out of the earth, but by whom or by what, I could not imagine.

For a mile or more we proceeded thus, quite forgetful of Standish's parting admonition, when, without our hardly being aware of it, the sun sank below the crest of the ridge to our left, and at that moment, we came to the ravine's end. The ridge upon our left continued onward for as far as we could see, and to our right was a termination of the rust-colored, rocky terrain of the ravine as it gradually merged with the green of growing grass and shrubs. Further on, we saw that it entered into a lush valley, one side being bordered by the ridge below which we were walking, and the other, by a group of low-lying, purple-hued hills which lay upon the horizon far to the right. In the center of the valley was a large blue lake into which flowed several small streams from various directions; and on the lake's further shore, a spillway formed the headwaters of a wide river which wound and twisted toward the valley's opposite end to disappear into a gorge between the hills. Lying in the angle of the river and the lake's further shore was what appeared to be a great number of block buildings completely encircled by a smooth, concrete-like wall.

With widened eyes, I turned questioningly to Coriell, only to see him gaping at me in the same manner.

## CHAPTER V

### Surprises

For a few moments, the unexpected sight which smote my eyes rendered me incompetent of physical reaction. I stood as though I had suddenly become transfixed to the ground beneath me; and Coriell, nonplussed at the scene he beheld, strived, with no little difficulty, to find words which would release the pent emotions distending within him.

"What the hell—" he blurted at length and then words failed him.

"What do you suppose that could be?" he asked finally, in a voice which was little above a whisper.

"I'm sure I don't know," I replied; "but from all appearances it looks remarkably like a walled city."

Indeed it did look like such, and as we con-

tinued to stare in a more detailed inspection of the urban-like compound, the fact that this was the case became conclusive in our minds.

The buildings behind the wall seemed to be of equal dimensions and symmetrically arranged to a greater or lesser degree, conferring upon us the conviction that they had been constructed by creatures endowed with intelligence. That the city was inhabited was indeterminable, as not the slightest movement caught our eyes, either in what we could see of the interior of the compound or the surrounding area without.

"It seems to be deserted," observed Coriell. "I wonder if our eyes behold the remains of a former civilization upon which some dire catastrophe descended to wipe it out along with all other forms of life."

I nodded my head apathetically. "One would certainly think so," I said; "and yet, somehow I have a vague premonition that this is not the case." I recalled the manifestation which betokened recent disturbance of the rock formations in the ravine behind us.

Coriell looked at me curiously. "What can be the case then?" he asked. "If there is life on this world, I'm sure we would at least have had some intangible suggestion of it. We haven't so much as heard a bird chirping."

"That is true," I said, demurely. "Possibly I may be letting my imagination get the better of me. Let's go down there and take a closer look. I believe we can do that and still be back at the ship before nightfall."

The sun, which had dipped below the ridge, became visible again as we moved out into the valley in the direction of the lake's shoreline opposite the city. The breadth of the lake at this point was perhaps a quarter of a mile; and to expedite matters by eliminating a long trek around its perimeter, we decided to swim across; but as we neared the lake-front in readiness, our

imagination was taxed further by the discovery of a crude dugout lying in the tall reeds which grew in the shallows off shore. It was more or less circular in shape, the interior of which was about three feet in diameter, but its concentric continuity was broken at a point where the sides met at right angles to form a sharp prow. Lying in the bottom of the vessel were two flat sticks both of which were some thirty inches in length, one end being broader than the other — obviously paddles with which to propel the craft.

"The catastrophe you spoke of must have happened very recently," I said with a short laugh which lacked feeling, "because if you'll take notice you can see that the boat is perfectly dry inside — a definite indication that it has been in service in the near past, otherwise water and scum would have collected to a certain extent in its bottom." I pointed to a path of broken reeds leading from the open water to where the craft rested. "This boat put into these reeds only a short time ago," I added. "The freshness of the breaks in the stems will attest to that."

"It beats me," said Coriell; "and," he added with gusto, "it also beats swimming across the lake. We'll feel a lot more at ease in dry clothing."

"And dry powder," I smiled, patting the holster on my hip.

We pushed the small craft free of the encumbering weeds and, with something of an effort, we both managed to squeeze ourselves into it and still allow enough room to wield the paddles.

"This thing was obviously built for a single occupant," remarked Coriell, "and a small occupant at that. It's a good thing our weight is of lesser import or we'd surely swamp the boat."

After a rather clumsy attempt to propel the oddly shaped craft, we managed to coincide our strokes so that it moved through the water quite



IT LOOKED REMARKABLY LIKE A WALLED CITY.

moderately; and as we neared the opposite shore, we saw, lying to our right, a small cove that had hitherto been hidden from view by verdure lining the shore behind which it lay. A narrow strait connected the cove with the main body of water and as we passed through into the cove we saw, lying on the beaches, a great number of the same type of dugout vessels as the one in which we rode.

Coriell and I again exchanged impressive glances, and presently we ran our craft aground and stepped ashore. All was still and inanimate. The only audibility was the remote cadence of falling water, undoubtedly emanating from the lake's spillway which lay some distance to our left. We walked slowly among the dugouts, instituting a cursory inspection, and then turned our steps toward the wall lying a hundred feet back from the shore. It was about ten feet high and built of stone, cut so perfectly that not the slightest edge protruded to defile its smoothness and uniformity, and giving it the appearance of solid, unbroken construction. No mortar or other adhesive was used between the slabs of stone.

Moving to the right, we followed the base of the wall to where it turned at right angles away from the lake and after a number of steps in this direction, we came upon what was obviously an entrance into the interior of the enclosure. It was a double-door affair set in a framework of heavy timber superimposed on the smooth sides, the doors also being of wood, planed and polished to a dull luster. Coriell leaned a shoulder to them, exerting pressure, but they did not budge. He stepped back and surveyed the wall, letting his eyes follow it for as far as it was visible in the direction we were pursuing.

"I suppose," he said, "that if there is any other access into the city, it will also be securely locked as is this one. However, there is more than one way to skin a cat." He sprang lightly into the air and landed atop the wall. The satellite's lesser gravity certainly had its advantages.

Coriell motioned me to follow and I leaped upward, but to my dismay, I saw that my momentum was too great and that the force of my leap would carry me much higher than the wall's summit. As I became aware of what was happening, I extended an arm toward Coriell. "Grab hold!" I cried, but his outstretched fingers missed mine by inches. Quickly he lunged toward me and his arms locked around my ankles. I sprawled heavily atop the wall, but the force of Coriell's flying tackle carried us both over the edge and we tumbled to the ground below—on the inside of the wall. Luckily neither of us suffered an injury, and, picking myself up, I cast a whimsical look at my companion. "If dexterity was measured in money," I chided, "I wouldn't have enough to put a down payment on a postage stamp."

Coriell laughed. "Your judgment was wrong," he said. "You applied a maximum effort where a light spring would have sufficed. Come on, let's explore some of the interior of this place."

Glancing about, I noticed that we stood in a narrow flagstone street or lane which ran parallel with the wall and between it and a line of closely spaced buildings all of which were similar in construction. They were all of a single story and built of cut stone in the same immaculate manner as the wall surrounding the city.

Crossing to the nearest house, we walked around its exterior examining it minutely. Three sides presented a number of embrasures all of which were covered from the inside by an immovable block of wood; while on the side opposite that which faced the city's wall was what was evidently the entrance into the interior of the house, inasmuch as it was only four feet in height. It consisted of a framework and door made of wood, but nowhere could we see a knob or handle by which the door could be opened. This, too, was

firm and unyielding.

And so it was with each building we passed. We could neither enter into, or even see into, the interior of any of them, and it propounded a question as to whether or not they contained a solution to the ever-deepening mystery amidst which we were floundering.

It seemed incredible! Here we were walking in the streets of a city on a world profusely invested with virility and which, by all standards of conformance, should be bristling with life; but instead, it gave every indication of being devoid of all animate organisms. What was it about this small world that imparted the impression that all was not as it outwardly appeared? Was it the incriminating evidence which marked the existence of an active stone quarry in the ravine? The boat in the freshly broken reeds?—and those lying upon the beaches? And now, buildings, all of which were undeniably locked from the inside?

My reflections upon the subject were distracted when Coriell suddenly grasped the upper portion of my arm. "Look!" he exclaimed, and then, he sprang upward, alighting upon the flat roof of the building near which we were walking. He motioned me to come aloft and then extended his arm, his forefinger pointing off in the direction we had been pursuing. I leaped gently, and this time I was fortunate to land beside him. I turned my eyes along the path of his outstretched arm which he now commenced to move slowly from side to side, indicating the entire horizon before us.

In the sky, just above the hills of the horizon, was the clearly discernible features of the surface of Pallucider, which had come into view concurrent with the satellite's revolving upon its axis. Directly above that part of the horizon at which we were looking, the land formations were distinct and sharply outlined in the rays of the setting sun, but further upward and extending to either side, the scene gradually faded into obscurity.

"What a marvelous sight!" exclaimed Coriell. "Here is a spectacle which no other living man has ever witnessed."

"It will become more awe-inspiring," I said, "as the coming of night will reveal." I turned and saw the great sun barely topping the ridge that bounded the valley near the point where we had entered. "And nightfall will soon be upon us," I reminded him. "I think we had better get back to the ship."

"I wonder what that could be," I heard Coriell say, and I swung about to see him pointing out over the city at a walled enclosure which, from the ground, had not been visible to our eyes. It was rectangular in shape with one side being taken up by what was unquestionably the largest building in the city and by all appearances it looked like a paddock which was utilized to exercise domestic animals which may have been housed in the large building. Whether or not it contained anything to conform with the other mystifying circumstances which we had confronted, was not apparent, for we could not see what lay behind the stone wall. The large building lying adjacent covered an area equivalent to a half-dozen of the general type of structure such as that upon whose roof we stood. It also was at least twice as high, and two rows of evenly spaced embrasures, one row above the other, inferred that each was a separate story.

"Whatever it may be," I said, glancing about the city's confines, "it is evidently the only one of its kind, from what I can see."

"Let's take a quick look at it," proposed Coriell; "then we can beat a hasty retreat back to the ship. A few minutes more or less won't make much difference."

I again shot a glance at the sun and saw it half exposed above the rim of the ridge. "Come on, then," I said; "but only for a quick look!"

into the interior of the padlock, or whatever it is. Jan and Bob will certainly be a bit perturbed at our prolonged absence."

"Didn't sunset seem to arrive awfully fast?" inquired Coriell, nonchalantly.

"It certainly did," I replied. "My mental pre-occupation tells me that we haven't been gone from the ship for more than an hour. I imagine that the satellite's cycle of rotation is much less than the twenty-four hour cycle of the Earth."

"More than likely," retorted Coriell, and he awoke lightly to the ground below.

As I leaned to the ground, I could have sworn that I detected a slight noise emanating from the inside of the building we had just quitted, but when I pressed my ear close against the door, I heard no sound to indicate that I had not been mistaken.

We resumed our steps in the direction of our goal and presently we entered into a plaza formed by the termination of a number of streets converging from all sides upon the large building and its walled enclosure. The wall was perhaps seven feet in height, and directly opposite the street from which we had just emerged, two pillars, standing several feet apart, enclosed what appeared to be a portcullis which barred a passageway behind it—undoubtedly the entrance into the enclosure. This, also, was only about four feet high, the remaining space above the portcullis to the top of the wall being enclosed in stone. Extending from the top of one pillar to the top of the other, a heavy iron beam supported a system of pulleys around which a number of chains depended to the top of the portcullis below.

We crossed the plaza to the gateway and, as we beforehand expected, it resisted our efforts to open it.

"I wonder what sort of people populated this small world?" mused Coriell, half-aloud. "Either they were relatively diminutive, or they went about on all fours, for no door, including this portcullis here, is more than four feet high." He then pointed to the large edifice which adjoined the end of the wall some fifty yards to our right. "Exclusive of that structure," he said, "I doubt if we could stand erect in any of these buildings even if we could gain access into them."

"It provides food for thought," I replied, and, stooping, I examined the iron bars of the portcullis and then peered beyond, into the tunnel-like passageway which extended onward for several feet and swung off to the right in a circular fashion and out of my range of vision. That it terminated shortly beyond the curve was evidenced by rays of light streaming into the passageway, apparently from its opposite end.

I straightened with a gesture of passive submission. Coriell then suggested that we again put our acquired talent of agility to use, whereupon we vaulted to the top of the wall and looked down upon the interior of the enclosure.

How can one put into mere words that which fully describes the emotions which permeated my entire being upon the first glance at the scene below? I know of no superlative that could possibly suffice the immensity of the moment.

About three feet below the top of the wall where we stood was the flat roof of a long rectangular structure built flush with the wall on three sides of the enclosure, lending it a general fort-like appearance. The remaining side was taken up by a long portico fronting the entrance of the large two-story edifice. The projecting roof below us prevented our seeing the front section of the rectangular structure which lay on the side of the enclosure above which we stood, but on the side opposite, and on the side which connected the two, we saw a large number of small openings which were indicative of doorways into individual stalls or cells. Imbedded in the stone near the portals of each of these openings was a thick metal ring to which

was fastened one end of a flexible, leash-like cable. Although some of these leashes were lying snake-like and unattached upon the ground, the greatest number of them were affixed to metal collars begridding the necks of living human beings—the first we had seen since our advent upon the satellite, fettered like so many canines in a dog kennel.

Some of these people were lying in and around the doorways of their respective cells, apparently asleep, and others were sitting abjectly, elbows on uplifted knees, staring at the ground or just into space. The sole attire of each was a hairy breech-clout around their loins, and notwithstanding the fact that a number of the prisoners were females, nothing further than this solitary garment concealed their nakedness.

The state of consternation which had enveloped us was suddenly broken by a voice shouting in English from somewhere among the captives below.

"Go back!" it cried. "The sun has already set and they will be upon you at any moment!" It crescendoed to a terror-stricken pitch, and we heard: "For God's sake, look at the sky and leave this place at once!"

Startled by the sudden cry, I saw one of the captives looking up at us and gesturing wildly at the rapidly appearing surface of Pellucidar in the sky above, and then motioning us away. A thrill of horror surged through me like a lethal charge of electricity when I recognized the man as Stan Vinson!

## CHAPTER VI

### The Thorugs of Orbiter

Then my premonitions had been correct! The satellite was inhabited; and by people who, from all appearances were rational beings as ourselves. But what were "they" to which Vinson had referred—"they" who would be upon us at any moment? And what had the setting of the sun to do with their appearance?

As Stan Vinson continued to shout and gesture, Coriell, as he became aware of the identity of the man, leaped to the flat roof below and bounded into the courtyard. I followed quickly and we hastened to our comrade's side.

"How did you get here?" I cried. "We thought you were dead!"

"There's no time to explain," Vinson replied hastily, but in a more temperate voice than previously. "You must get away from here at once lest you find yourselves in the same plight as you now see me. Hurry! If you would effect my liberation, return with the rising of the sun."

"Return, nothing!" said Coriell, derisively. "You're getting out of here right now!" He drew his pistol and aimed it at the leash about two feet from where it was attached to the collar around Stan's neck. Three times he fired before the strands parted and Vinson was free.

Even before the reverberations of the shots died away, there appeared on the portico of the large building, several small creatures, each of which, to me, looked a great deal like a miniature version of an orang-utan.

"It's too late!" exclaimed Vinson. "They're already awake and stirring."

The creatures continued to emerge from various entrances in the building until there must have been fully a hundred of them crowding the portico. Not one was more than three feet in height. From head to foot their bodies were covered with thick locks of shaggy, red hair. Ape-like, their faces protruded, and all four of their canine teeth were exposed for an inch or two above and below their lips; but, unlike apes, they stood erect; their arms, while bulging greatly at the shoulders, being of proportionate length.

As the creatures became aware of our presence, they commenced jabbering excitedly among them-



...METAL COLLARS BEGIRDING THE NECKS OF  
LIVING HUMAN BEINGS.

selves, some of them pointing to the remnant of the leash which dangled from the collar on Vinson's neck.

"We'll have to make a run for it," I said; and turning to Vinson: "Are you aware of the agility the satellite's gravity affords us?"

Vinson nodded. "Quite aware," he replied; "but I've never been in the position to take advantage of it."

"You will be, now," I said; "here they come."

As the creatures on the portico advanced toward us, we turned toward that part of the wall where Coriell and I had stood a few moments before, but we were surprised when we saw another large group of the pygmies emerging from what must have been the inner end of the tunnel-like passageway behind the portcullis. Before we could make an effort to leap to the wall's summit, the creatures were upon us from both sides.

Lashing out with my fists, I dealt terrific blows to those who came within my reach, but for each one I hit, several more rose to take his place. The sharp reports of a gun distracted my assailants momentarily, and from the corner of my eye I saw Coriell firing point blank into the surging mass around him. A hasty look at Vinson caused my heart to leap in mild shock as I saw the man, with a look of bestial fury upon his countenance, swinging two of the creatures, flail-like, before him. His hands had each by an ankle as he swung them, with devastating effect, into the faces of all who were unfortunate to come within range.

Our height gave us a temporary advantage over the creatures, but no great amount of intelligence was required to deduce the final outcome of the battle. We could never hope to overcome such a horde; but from the example set forth by Vinson, I saw the possibility of an evasion of escape. Quickly, I grasped two of the creatures similarly.

"Forget the pistol!" I shouted to Coriell, who then had the creatures at bay with his elbows and feet as he endeavored to insert a fresh clip of ammunition into his weapon. "Grab a couple of the fiends thus, and we may be able to make enough clearance to jump to the top of the wall. We've got to get out of here!"

Holstering his pistol, Coriell seized two of the vicious little men, and all three of us swung six of the creatures with wild abandon. The havoc inflicted was evidenced by sickening, bone-crushing sounds as head met head and soon our living weapons were reduced to nothing more than a soft mass of bloody pulp requiring us to make a hasty substitution of bodies as those we wielded lost their lethal effectiveness.

Twice we made substitutions thus, and just as I felt as though I would drop from sheer exhaustion, I saw that the horde had fallen back somewhat, affording us the room needed to make our leap to safety. At my shout of command, we cast our living flails into the faces of those who were in the forefront and swung upward toward that part of the wall situated above Vinson's erstwhile prison stall.

All three of us missed the wall by the proverbial mile. We continued to sail upward and out over the city, leaving the wall far below and behind, but my surprise at our unexpected flight was only of an instant's duration as I recalled the theory I held concerning the satellite's gravitational effect that the coming of darkness would induce. Our weight had lessened to the extent that we now floated through the air like feathers being borne by a light breeze. Greatly elated, I found that by moving my arms in the manner of a swimmer I could increase my forward progress; and by increasing the movement of one arm, I could turn in any desired direction. My companions, too, had discovered the new means of propulsion and, like three birds on the wing, we soared across the city.

Looking downward, I saw the horde of pygmies following our flight, futilely screaming at us and gesturing menacingly. It was obvious that the creatures weren't endowed with the seemingly miraculous agility that the satellite's variation of gravity accorded my companions and me.

We floated over the outer wall where it ran parallel with the river at the opposite side of the city from where Coriell and I had entered. The lake's spillway lay to our left, and just below it, a crudely constructed bridge of timber spanned the river and many of the hideous horde were already crossing it as they continued to pursue us.

I could see that it would be quite hopeless to attempt to outdistance the creatures as the comparatively slow rate of our forward progress left much to be desired. I closed in on my two companions and began the strangest conversation as yet known to the annals of natural science—that of three men, floating unattached in mid-air with no apparent means of suspension. When I was close enough to assume a normal tone of voice, I gestured at the howling mob beneath us. "We can't lead these creatures back to the ship," I said. "It's evident that they don't intend to abandon the chase."

"They won't," said Vinson. "If I'm any judge of their traits of character, they'll pursue us till the approach of morning."

"Then I think we had better continue in this direction and away from the vicinity of the ship," I said. "What sort of creatures are they, anyhow?"

"They're fiends," cried Vinson, with a visible shudder. "The captives you saw in the courtyard provide choice nourishment for the rulers among them."

"You mean they're cannibalistic?"

"Decidedly," Vinson replied. "Each evening a prisoner is selected to fill the bill. Why I was kept so long is open to question, but most likely, it was due to my mean disposition's offering them a superficial form of amusement. Whenever one would come near me, I'd lay him out with a blow of the fist. The others who were watching seemed to derive a great deal of pleasure from this."

"How did you get there in the first place?" asked Coriell. "You could have felled me with a feather, so great was my surprise when I saw you."

"No greater than my own surprise," replied Vinson. "When I saw you two standing atop the wall." He held up his left arm and indicated a wrist-watch strapped to his wrist. "This satellite," he said, "has six hours of darkness and six hours of daylight at its equator, near which this country is situated. Since I saw you last, it has cycled forty-three times upon its axis, which would correspond to slightly more than three weeks of time on the outer crust. As you know, Standish loaned me this wrist-watch when I went on guard of the BONNIE PRINCE CHARLIE. I had almost completed my shift and was about to return to the ship to rouse Bob Hyde when, suddenly, I was cognizant of a rushing sound in the air behind me. It lasted only for an instant before I felt myself being borne from the ground as hook-like pincers dug deeply into the soft flesh behind my shoulders. When I recovered my breath, I glanced upward and my heart stood still as I saw what it was that held me in its grasp."

"A thipdar," prompted Coriell.

"That is right," said Vinson, surprised. "But how did you know?"

"Merely elementary," smiled Coriell. "We deduced the fact."

"Well, anyway," continued Vinson, "I immediately gave myself up for lost. I had dropped my rifle, but nevertheless, I still thought of drawing my pistol and shooting the beast, hoping that I may be able to place a shot into its heart. Before I put the plan into execution however, I discounted the whole idea as plain suicide for,

if I were fortunate enough to kill the beast, it would surely plummet to the ground far below—carrying me with it. I decided to wait. On the beast flew, over plain and mountain until, of a sudden, I was aware of another presence in the sky. It sounded like the wind screaming past the wings of a plane in a long glide, and, looking upward, I saw another of these fearsome thipdars swooping down upon us. All was indeed lost now, I thought, and I drew my pistol in hope that I may luckily kill the beast before it attacked. I had no chance to fire however, for the beast which bore me began a series of maneuvers in an effort to escape its attacker, depriving me from drawing a bead. Burdened by my weight, the creature rapidly lost ground and the gap closed between it and its pursuer. Just then, the sun was blotted out and, looking aloft, I saw Pellucidar's satellite very close above us and I knew we had entered into The Land of Awful Shadow. Then the pursuing thipdar struck. It immediately attempted to seize me from the talons of the beast which held me, but my beast was not to be intimidated—it refused to relinquish its hold upon me. The talons of both reptiles constantly bit into my flesh, tearing my clothes; and again I attempted to shoot our attacker. Before I could fire however, a great leg struck my wrist, sending the pistol spinning from my grasp. My heart sank within me as I realized that I was now completely unarmed.

"The hissing and screaming of the fighting reptiles was fearful to behold as they battled over possession of me. I felt the talons which held me slowly relaxing their grip and I realized that if the beast hoped to survive, it would have to let me go. Then, the creature released me, but to my complete surprise, instead of plunging to the ground far below, I just seemed to hover in mid-air—actually, I was slowly drifting upward. The beast which had held me, relieved of its encumbrance, tore into its attacker with much vigor; and the last glimpse I had of them as they disappeared into the gloom, they were still battling furiously.

"I saw that I was only a couple of hundred feet above the surface of the satellite toward which I was drifting. This valley with its horrid city was directly below; but pain and loss of blood from the numerous wounds inflicted upon me during that terrible battle, proved too much for my greatly abused stamina, and I lost consciousness. When I regained my senses, I was leashed in the compound where you found me."

"Who were those other prisoners in the compound?" asked Coriell. "In the gathering dusk, they looked as human as we."

"They are," replied Vinson. "They're slightly smaller in stature than our race however. The tallest among them grows no more than five feet in height. Their country lies in another part of Orbitor—which, incidentally, is the name they so appropriately call this world. These people are constantly harassed by the pygmies—or Thorugs, as they are called—for which purpose you already know. During my incarceration, I found my fellow prisoners to be a peaceful and sociable lot, having learned enough of their language to permit the simplest form of oral communication."

"But why is it that we saw none of these Thorugs during the course of the day?" I inquired. "Not one did we see, either in or about the city, until they suddenly beset us after you had been released."

Vinson smiled listlessly. "If you did happen to see one during the daylight hours," he said, "he could have offered you little or no resistance for he would have been practically incapable of any movement whatever. The Thorugs, as well as all other living beings native to Orbitor, can only arise with the setting of the sun and the coming of the lesser gravitational pull. Du-

ring the daylight hours they are utterly earth-bound—held fast by, what is to them, the terrific force of their small world's gravity. They utilize this time for slumber and are very seldom found away from their domain after sunrise. Only when their country is facing Pellucidar's surface are they rendered mobile."

"Then they will have to abandon the chase before daylight," I surmised, looking at the screaming horde beneath us.

"They will, one way or another," replied Vinson. "I imagine they'll give up the pursuit with the approach of daylight however, lest they find themselves literally chained to earth where they stand. Intuitively, they return to the city's confines before sunrise, although I have heard that raiding parties stay away, sometimes for several days, in the fulfillment of their purpose." Vinson tugged at the loose-fitting collar around his neck. "I wish I were rid of this thing," he said. "As trivial as it seems, it is causing me no little discomfort. It's becoming a strenuous effort to stay aloft."

The collar and dangling two feet of cable were doubtless causing Vinson to expend much exertion inasmuch as the material from which it was made was indigenous to Orbitor. For my part, it took little effort to stay aloft; merely stroking the air intermittently, palms downward, whenever the need arose. But not so with Stan Vinson. The extra weight about his neck was compelling him to keep his arms in motion almost constantly. I gestured to Coriell and we maneuvered into a position, one of us on either side of Vinson. We each threw a supporting arm about his waist to offer him respite from his labors, and, like some grotesque bird of the noetern, we floated onward, totally unconcerned with the horde of howling savages below.

## CHAPTER VII

### Back to Perdition

Unlike the moonless nights of the outer crust, the night-time hours of Orbitor were not that of profound darkness. With sunset had come the appearance of Pellucidar's surface; and then the upper rim of the immense circle that was Thuria, The Land of Awful Shadow emerged from below the horizon like a gigantic, dark moon, appearing to be so close as to give one the impression that he could reach out and touch it.

As it rose higher into the sky, we could plainly see the land formations of which it was composed. Near the upper rim of the great shadow was the irregular outline of Thuria's coastal boundary where it met the great sea known as the Sojar Az; and further upward, lying in the sunlight off the coast, were two small islands—undoubtedly those which David Innes had dubbed Indiana, and The Isle of Trees.

Our surroundings continued to darken as Thuria rose higher, and when the great shadow reached zenith, its entire circumference was bathed in the brightness of the terrain which surrounded it like an enormous halo. Consequently, instead of the profoundness of night enveloping us, the brightness of day merely deepened into a subdued twilight which allowed a more or less comprehensive view of the surface of Orbitor below us.

And so the night wore on. We had drifted for perhaps a mile in a direction at right angles from where the BONNIE PRINCE CHARLIE was located and as morning approached we sensed that our weight was once again reverting to the status engendered by the hours of daylight. It became increasingly difficult to retain our altitude until, finally, no amount of strokes would maintain our buoyancy. It reminded me of a struggling swimmer about to go down for the third time.

Suddenly, as if at a prearranged signal, the hideous horde below dispersed. Back toward the



city they ran as fast as their short legs could carry them.

"That's a relief!" grunted Coriell, as he observed the fleeing mob. "I doubt if we can stay aloft another two minutes."

"We can descend now in safety," Vinson told us. "They won't be back."

We settled gently to the lower slopes of a small hillock and stood watching the rapid flight of the Thorugs as they converged upon their city like a swarm of bees to the hive. Glancing across the lake, I saw, near the point where Coriell and I had crossed, another group of the little men hurrying toward the shoreline and, in the slowly approaching daylight, I could see that they were dragging two others, larger than themselves, at the ends of a half-dozen leashes, apparently affixed to collars such as that which adorned Vinson's neck. The need for six leashes was evidenced by the struggles of the captives in their efforts to escape. They lunged viciously at a captor only to be restrained by the other five who held them in tow. It was not yet light enough to see whether or not the captives were men, but, judging from the strenuous efforts of the Thorugs in restraining the two, I surmised that they were very masculine indeed.

Reaching the lakeshore, the Thorugs placed the struggling pair into separate dugouts and after they themselves had boarded others, two to a dugout, they commenced towing their prisoners across the lake—the tow cables being the leashes attached to the prisoners' necks.

Watching with interest, I nudged Vinson and pointed to the group as they debarked and moved toward the city wall.

"A raiding party," he said, venomously. "Two more poor unfortunates for the Thorugs' cooking pots."

"Can we not return and release them while the Thorugs sleep?" inquired Coriell, as his eyes centered upon the group. "It nauseates me to think of the fate in store for them."

"You forget that they, too, are earth-bound like the Thorugs," Vinson reminded him. "There must be dozens of prisoners in the city."

"It poses a problem," replied Coriell; "but there must be something we can do."

"We'll decide that later," I said. "Right now we're returning to the ship before Jon and Bob have a fit over our prolonged absence."

We walked down the lower slopes of the hillock and struck out across the valley, skirting the lakeshore which lay to the right of the city. We passed into the ravine just as the sun emerged from below the hills at the valley's opposite end far behind us. Passing what I had assumed to be a stone quarry, I again pondered at the peculiar appearance of the rock formations.

"It evidently is one of their quarries," said Vinson, when I had put the question to him. "The Thorugs are constantly engaged in masonry of all sorts; and in repairing, where the stone shows the first sign of deterioration. They do all the work themselves as no prisoner is allowed to do manual labor of any kind—they're just fattened for the feast, so to speak."

"And all this work is performed in the hours of darkness?" I asked, merely for verification. "It's amazing, seeing how immaculate the city is built."

"They have marvelous eyesight," said Vinson. "They can see as well at night as we can see in the daytime."

We emerged from the ravine and entered into the meadow and presently we saw the BONNIE PRINCE CHARLIE lying as we had left it the day before. As we neared the ship, I saw a number of tools lying near the compartment which housed the engine, indicating that Stanlish had not yet completed his repairs.

"They must still be asleep," remarked Coriell, when it became apparent that neither Stanlish nor

Hyde were in evidence around the vicinity of the ship's exterior. Coriell smiled, and drew his pistol, firing a shot into the air. "Hey, you guys!" he shouted. "Rise and shine! Look who we have with us!" He then sprinted the remaining distance in great leaps and bounds. Vinson and I, slightly less demonstrative, saw him spring into the open doorway of the ship only to emerge a few moments later with a questioning expression upon his countenance.

"They're not here!" he cried.

Vinson and I ran the rest of the way and soon saw that Coriell had not been mistaken. Our comrades were not in the helicopter.

"Where can they be?" asked Vinson, looking first at me and then Coriell.

"They could have gone after fresh meat," suggested Coriell.

"What fresh meat?" demanded Vinson. "On Orbitar, there's nothing to be hunted in the daytime."

"That's right—I forgot," Coriell admitted; "but Jon and Bob didn't know this."

"They may have gone on a search for Bill and you."

"I hardly think so," said Coriell with a shake of the head. "In the first place, we weren't gone for such a length of time as to cause them to become too perturbed. Secondly, they knew in which direction we went. We would have seen them if—" He stopped short and all three of us exchanged glances. I knew that the same thought had smitten our minds simultaneously—the recollection of the two struggling captives we had seen the Thorugs dragging along just before sunrise!

"Is it possible," gasped Coriell, "that it was Stanlish and Hyde whom we saw?"

"It must have been," I said. "I don't think that both of them would have left the ship otherwise."

"Well," said Vinson, "if such is the case, there is little need for concern. We can return to the city at any time before sundown and release them at will. Right now, I intend to get into some clothing. But first," and Vinson tugged gently at the remnant of leash, "let's see if we can find something with which to remove this iron necktie."

Coriell produced a sharp file from the ship's tools and while he was cutting through the collar about Vinson's neck, I rummaged through the ship until I had found some extra clothing and boots. I also discovered several cans of fruit and vegetables left over from our original store of provisions.

Filing through the collar proved to be a more tedious task than Coriell had anticipated as the strange metal was extremely hard and its position around Vinson's neck required that the utmost care be applied in the process. But eventually the band was severed and it fell to the ground. Meanwhile, I threw a hasty meal together from the few cans I had found in the ship, and after Vinson had donned his new clothing, we proceeded to satisfy our hunger.

The meal over, we slung rifles across our shoulders and began the return journey to the city of the Thorugs, and in due time we stood at the lake's shore opposite the city. A brief search of the tall reeds disclosed several of the small dugouts and, commandeering three of them, we paddled across the lake.

We arrived at the great wall without incident and entered the city by putting our agility to use; and, as before, the thin veneer of silence imparted no suggestion of the enmity it so adroitly concealed. Presently we entered the plaza surrounding the prison compound and sprang lightly to the top of the wall. No one was in sight in the courtyard below; and, except for those lying unattended upon the ground, each leash was drawn into the stall to which it belonged, the only part of which was visible, being several inches

## Freedom

near the end where it was connected to the metal ring at the portal of each cell.

Leaping into the interior of the courtyard, we commenced a close inspection of the cells; but when we had peered into all and saw that neither Stanish nor Hyde was in any of them, I thereupon thought that our surmise had been wrong and that the two struggling prisoners had not been our comrades after all.

As nothing further seemed to be gained by remaining in the courtyard, we were about to leave when I saw one of the prisoners slowly and strenuously crawling from the interior of his stall. The fellow seemed to be trying to attract our attention inasmuch as he couldn't raise his arm; but, with an effort, he managed to raise his right hand off the ground and, painstakingly, he waved it back and forth at the wrist-joint. We hastened across the courtyard to where the man lay and, as we reached his side, I heard unintelligible sounds issuing from his throat. Vinson had told us that the pressure of gravity also had an effect upon the vocal cords of the Orbiterians to the extent that the daylight hours rendered them almost mute.

Grasping the man underneath the shoulders, Vinson propped him against the wall near the opening of his cell and for fully two minutes listened intently as the man hoarsely whispered into his ear. When it was apparent that the fellow had conveyed his message, Vinson turned to us.

"Jon and Bob are here," he said. "This fellow tells me that they were brought in early this morning, but instead of being placed in unoccupied cells here in the courtyard, they were hustled into The House of Orto, which is what that building there is called," and Vinson jerked a thumb at the large two-story edifice. "Freely translated," he went on, "Orto means 'king', although there are many Thorugs who bear the title; and all the Ortos dwell within this building."

"This circumstance can only mean one thing," and Vinson's eyes mirrored his repugnance to the words that followed. "Standish and Hyde are next on the creatures' menu," he said, bitterly. "Maybe they're already dead," retorted Coriell, pessimistically.

Vinson quickly shook his head. "There was no time," he said. "They arrived at The House just before sun-up which allowed the Thorugs only enough time to prepare for their retirement. Besides," he added—somewhat elusively, I thought, "the creatures have rites before the feast."

"What sort of rites?" I asked.

"The victim is roasted alive," Vinson muttered, his eyes blazing animosity. "Just what the rites are, I don't know; but many an evening I sat in this very courtyard listening to a hideous cadence of chants which increased in volume until the intermingling screams of the victim were drowned out then—silence."

"Our problem won't be an easy one," he added, as his last words brought no comment from Coriell or me. "Each embrasure and doorway is so thoroughly sealed that nothing short of dynamite could get us into the building."

For a few moments I stood in thought as I weighed Vinson's words in my mind. "Why not?" I cried, suddenly. "When I was searching the ship for the clothing you are now wearing, I came across a box in which was what looked like just that—dynamite in stick form. With it was a smaller box containing detonators. You fellows wait here while I run back to the ship to get them."

"Wait a minute!" cried Vinson as I turned to leave. "When I used the word 'dynamite', I was merely speaking figuratively. For all we know, Jon and Bob could be fettered directly behind that part of the building where you set the charge. You can't just blast your way in!"

"Nor do I intend to," I replied, and leaped to the top of the wall.

When I arrived back at the BONNIE PRINCE CHARLIE, I immediately commenced the first stages of a hastily conceived plan. I brought the box of dynamite from the ship and set it upon the ground. Examining the label, I saw that the box contained the type of powder where percussion alone was not sufficient and that a detonator would have to be used to set off a charge. Re-entering the ship, I probed its interior until I had found a spool of thin, flexible wire and, cutting off a couple of lengths about four feet long, I replaced the spool where I had found it and returned to the box of dynamite.

Taking a dozen sticks from the box, I bundled them together and wrapped them securely with a length of wire. I repeated the procedure with twelve more sticks, and I had two formidable charges lying before me. I then opened the box of detonators and inserted one into the end of each stick of dynamite. I now had two armed charges, each with twelve detonators protruding in such a manner that the striking of any one of them would explode the charge. Nodding in silent satisfaction at my handiwork, I tucked the two bundles underneath my arm and carefully made my way back to the city of the Thorugs and the courtyard where Coriell and Vinson awaited.

"What do you intend doing?" asked Coriell when he saw the bundles of powder I was carrying.

"First of all," I replied, "I intend waiting until the Thorugs awaken; and then proceed to demonstrate the consequences if they refuse to release their prisoners. You can also communicate with the Thorugs?" I asked of Vinson.

He nodded.

"Good," I said with satisfaction. "Is there any buildings nearby which you know are empty?"

Vinson shook his head. "I couldn't say," he replied. "You fellows know as much about what is beyond this compound as I do."

"I'd prefer a couple of empty houses," I said; "but, empty or not, it's of little consequence. Let's go out into the city."

We leaped to the wall's summit and for a few seconds I scanned the area; then my eyes centered upon a small building standing alone about a hundred yards to our right. It seemed to be one which was still under construction in spite of its having four solid walls and a roof. However, there was no door built into the space provided for it, and the embrasures were clear of shutters.

"That one looks empty," said Coriell, pointing to the same building at which I was looking.

"It surely does," I agreed; "and it's at an ideal distance from the compound. Let's get over there."

My companions shot questioning looks at me, and it was apparent that neither as yet realized the exact nature of my plan; and as they propounded nothing further than the silent, interrogative glances, I offered no voluntary explanations, preferring to let the chips fall where they may.

We arrived at the unfinished building and saw that it was indeed empty. Selecting an embrasure that could be seen from the wall of the prison compound, I placed one of my bundles on the casement so that the end containing the detonators faced outward toward the prison wall.

"Now," I said, looking around the area, "if we can find another of these empty buildings we can place the other charge thus, and then await sundown." Further on, I saw that several more of the buildings were in various stages of construction but these were either too far from the compound or the progress of construction was not advanced far enough to consummate my purpose.

"Place the other charge in an occupied building," said Vinson, maliciously. "I'm sure I'd have no regrets if you blew up the entire city."



... SOME OF THEM POINTING TO THE REMNANT OF  
THE LEASH WHICH DANGLED FROM THE COLLAR  
ON VINSON'S NECK.

"That's not the point," I replied. "I'm afraid that if I place the charge in an occupied building, the creatures will discover it as they open the shutter—before it has served its purpose."

"Why place it in an embrasure then?" demanded Coriell, fishing in the pocket of his breeches.

"Where else can I place it?" I asked. "As you can see, the walls are perfectly smooth—"

"Drive one of these into the stone and hang the charge upon it," Coriell interposed, holding out the palm of his hand in which rested several large nails.

"Just the thing!" I cried, taking a stout nail.

"How is it that you carry these in your pockets?"

Coriell smiled. "They're from the top of an ammunition box," he said. "When I withdrew them to open it some time ago, I put them in my pocket rather than toss them on the floor of the ship. They've been in my pocket ever since."

I moved to the nearest occupied house and drove the nail into the obscure line which marked the juncture of two slabs of stone laid above the doorway. I then took the remaining charge of dynamite and hung it by inserting the nail between the sticks and the binding wire. As in the case of the other, the end containing the detonators faced outward and toward the prison compound.

The sun had now moved close to the horizon in its rapid flight across the sky and it hardly seemed possible that the day was almost gone. Retracing our steps to the compound, we sprang to the top of the wall and sat down upon the capstones and waited.

We had not long to wait, however. Lower and lower the sun sank and then the great disk seemed to become stationary as if it had come to rest upon the horizon. But this impression was only momentary and it submerged rapidly until it disappeared from sight behind the ridge. Pellucidar had come into view above the valley's opposite end, and in the courtyard below we saw some of the occupants emerging from their cells. They crawled forth upon all fours, and then, painstakingly it seemed, pushed themselves to their feet and stretched their frames. Then most of them sat down with their backs to their cells and stared disconsolately at the ground. Others lay down in the open courtyard, and from all appearances, went back to sleep.

"The start of a busy day," observed Coriell, with a listless smile.

Presently, there appeared upon the portico of The House of Orto, several of the hideous Thorugs and as no time was to be wasted I turned to Vinson. "Call down to them," I said, "and tell them to release the prisoners they brought in this morning. Tell them that if they fail to do this we shall destroy their city with our thunder sticks."

We arose and stood upon the wall and as we did, some of the Thorugs espied us and, with shouts, they advanced toward that part of the courtyard where we stood. Their cries brought a great number of the creatures hurrying from the building and as Vinson commenced shouting in the Orbitarian tongue, they halted, and I could see that they were immediately impressed by the manner in which he spoke. Stan emphasized his words by pointing at the creatures, waving his arms in a semi-circle to indicate the entire city, and then tapping his rifle which he held up for all to see.

That the Thorugs held the rifle in respect was evidenced in the fact that none moved forward in a concentrated rush such as had happened the preceding evening. Apparently, they well remembered the havoc inflicted upon their numbers, especially where the loud reports of Coriell's pistol had killed several of them with no visible effort. Then one of the creatures in the forefront stepped forward and spoke.

When he had finished, Vinson turned to Coriell and me: "He says that he doesn't believe we can

destroy their city and that he is not afraid of our thunder sticks. Nor will they release their prisoners. Such a thing is unheard of, he says; but they will allow us three to depart in safety if we will leave now."

"Very kind of them," I sneered.

"He must take us for fools," growled Coriell. "In order to let us leave in safety, they must first have the potency to restrain us. We could hover above them all night and pick them off with our guns; and they'd be helpless to prevent it."

"Well and true," I admitted; "as long as the creatures remained in the open and allowed themselves to be shot. I doubt very much if they're that stupid; and as we can't shoot through stone walls, we couldn't prevent the hideous orgy taking place within the building." Turning again to Vinson, I said: "Tell them to take vantage points on the second floor of The House of Orto and they will then behold the terrible power of the thunder stick."

Vinson translated my words into the Orbitarian language and most of the Thorugs disappeared into the building as if glad of the opportunity to rid themselves of the sight of our rifles. However, a few stragglers remained in the courtyard, but when I waved my weapon menacingly before them, they, too, turned and scurried into the building.

Soon we saw the creatures crowding the embrasures on the side of the building which faced us, and which would permit them an unobstructed view of the two houses on which I had placed the dynamite. Nudging Coriell's arm, I pointed to the unoccupied building where the first charge lay on the embrasure. It looked no larger than a copper cent. "Do you think you can hit it?" I asked. "I'm far from being an expert rifleman and if I shot and missed, it wouldn't help the effect I'm trying to create. It must be done with the first shot. Do you think you can do it?"

Coriell nodded affirmatively. "I'm no Bob Hyde," he said, with a faint smile; "but I did take a little pride in my marksmanship during my Army days."

"Fine," I replied; "but even if you do hit the charge there's a better than even chance that it won't explode. You must hit one of the detonators. I placed one in each stick to offer a greater ratio in making a successful hit." I saw that the Thorugs were observing us curiously; and I nodded to Coriell. "Fire when ready," I said.

He raised the rifle to his shoulder and carefully drew a bead on the small target a hundred yards away. In broad daylight it would have been a difficult shot; and in the diminishing light, the dynamite lying on the embrasure of the house was barely discernible. I held my breath as Coriell's finger tightened upon the trigger.

The report of the rifle was drowned in the terrific explosion that followed; and the small building disappeared in an eruption of smoke and flying rubble, some of which reached as far back as the wall where we stood. Coriell had made a direct hit!

As the echoes of the blast died away, a great shout arose from the Thorugs crowding the embrasures in The House of Orto and from those in the city whom the blast had taken unawares. The latter scampered madly in all directions which cleanly bespoke the terror induced by the sudden burst of devastating energy. The former, jabbering excitedly, cast fearful glances in our direction and at the spot where the ill-fated house had been. Watching intently, we saw the jabbering Thorugs move away from the embrasures and presently some of their number appeared upon the portico, and towering above them were Standish and Hyde, held in tow by several leashes attached to collars about their necks.

Just then, another group of Thorugs emerged from an entrance at one end of the portico and rushed aggressively at those who had our comrades in tow. A vicious scuffle ensued as some of the

attackers grasped the leashes and attempted to pull the prisoners back into the building. Evidently this group was opposed to whatever decision had been reached regarding the release of our comrades and were attempting to thwart it.

Back and forth across the portico moved the struggling Thorugs, and, ironically, those who seemed to suffer the most were Standish and Bob Hyde as they were roughly jostled by the surging mob. Suddenly, Vinson sprang into the courtyard and advanced toward the melee. Shouting loudly in the Orbiterian tongue, he brought his rifle to bear, brandishing the muzzle menacingly at the struggling group. And as the Thorugs heard his words and saw that slim messenger of death pointing directly at them, they dispersed quickly and ran back into the building dragging Standish and Hyde with them. Without hesitation, Vinson followed on their heels; to emerge from the building a moment later flanked by Standish and Hyde and dragging a screaming Thorug by the scruff of the neck. Jabbing him with the muzzle of his rifle, Vinson stood by while the creature produced a key and opened the two collars; and once our comrades were free, he seized the Thorug and hurled him through the entrance and back into the building. All three men then leaped upward and floated slowly to the wall where Coriell and I were standing. The moment Vinson arrived on the wall, I grasped him by the arm. "Call the fiends out here again," I instructed. "We're not through with them yet."

Vinson again shouted words in the Orbiterian tongue and very slowly, their attitude showing distinct fear and consternation, some of the creatures emerged from The House of Orto. Many others again crowded the embrasures.

"Tell them," I said, "to release all these other prisoners and allow them to return in safety to their own country. Tell them to never again molest them lest they risk the destruction of their city." A great wail of anguish arose from below when Vinson delivered this additional ultimatum.

"No, no!" they cried, as Vinson translated the words. "You have your comrades. Leave our city!"

"Release the others!" shouted Vinson. "Have you forgotten so soon the devastating power of the thunder stick? Look!" He extended his arm in the direction of the building where I had placed the second dynamite charge. Then, in English, he said: "Hit that charge, Vern, and we'll have these fellows in our hip pockets."

Coriell fired; and again hit the bull's-eye as another great explosion rocked the foundations of the city. Immediately, a half-dozen Thorugs ran madly among the prisoners, unlocking the collars around their necks until all were free.

"We can go down into the courtyard now," said Vinson with a triumphant smile. "The creatures won't come near us after that exhibition of power."

The five of us descended into the courtyard and at once assumed the roles of overseers in the great exodus which fear and reverence had fostered. At my suggestion, Vinson summoned a group of the covering Ortos to act as an escort for the departing column until it had reached the gates of the city; and we passed through the streets to the consternation and bewilderment of the populace as they saw the procession. No one offered to molest us. It seemed as though the events which transpired in the courtyard following each explosion had already reached the ears of the entire rabble of the city.

As the last of the column passed through the gateway and out of the city, Vinson again warned the accompanying Ortos of the dire consequences which would result if they were to resume raiding among the humans of Orbiter. However, they steadfastly reassured him that never again would a Thorug leave his own country for the foul purpose. At a gesture of dismissal from Vinson, they scampered back into the city, closing the gates behind them.

Before the erstwhile prisoners left for their own country, a great multitude of voices arose as one in a cry of thanksgiving at their deliverance; and with a friendly wave of acknowledgment and farewell, my companions and I sprang into the air and sailed out over the lake.

Presently, we descended to earth on the shore opposite the city and struck out afoot across the valley in the direction that would take us back to the BONNIE PRINCE CHARLIE. During the walk, Standish and Hyde related how they had been taken unawares by the Thorugs as they both had slept.

"We had thought that the satellite was void of life," Standish said; "not having seen the slightest inklings of it during the day. We retired for the night without the faintest conception of the fate that was to overtake us."

When we arrived at the ship, I immediately threw myself upon my bunk and fell into a sleep of utter exhaustion. The sun was quite high when I awoke and I learned that Standish and Hyde, not taking any chances, had divided the night between them in a tour of guard duty. Standish then announced that he had worked since dawn and that the ship's engine was completely repaired.

When we were ready to leave, I turned to my companions. "Where do we go from here?" I asked. "Home?"

Vinson waved an arm at the sky above. "Home?" he exclaimed. "With all of Pellucidar still lying before us, you ask if we want to go home?"

"You're certainly a glutton for punishment," I laughed. "I should think that the Thorugs of Orbiter would have cured your adventurous nature."

"Not in the least," replied Vinson, innocently. "Didn't I tell you? The Ortos roast their fare—they don't cure it."

The End



# NOTE ON THE ORBITAL PERIOD OF THE DEAD WORLD

1

By Frank J. Brueckel

In an earlier investigation ("The Nature of Pellucidar's Sun," BB #20) I undertook to show that gravitational phenomena in Pellucidar would be just those described by David Innes in the narratives transcribed by Edgar Rice Burroughs, if the tiny central sun consisted of "negative mass" matter which exerts a repulsive force upon the "ordinary" or "gravitationally positive" matter of our everyday experience. But there remained one problem for which the theory appeared unable to account, and which led me to question the veracity of David Innes's story. This was the fact that the Dead World, Pellucidar's diminutive "moon," revolves around the inner sun in the same period required by the hollow shell of our planet to complete one rotation on its axis, so that the little satellite remains always over the same meridian on Pellucidar's concave surface. If the little "moon" were composed of "positive" matter like the earth-shell, then the repulsion of the inner sun should press it against the surface of Pellucidar, where its own weight would cause it to crumble and form a mountain at least twenty or thirty miles high. On the other hand, if the Dead World consisted of "negative mass" matter like the inner sun then it should complete an orbit around the latter in only about 79 minutes, rather than in 24 hours.

Recently, however, I have taken another look at the problem and find that the "levitron theory" is fully capable of accounting for the inner satellite's observed motion. By way of background let me review quickly the essential concepts of the theory.

The basic hypothesis is that the fundamental particles of matter occur in two forms which have opposite gravitational masses. By the "gravitational mass" of a particle I mean the strength of the force it can exert upon another particle at some arbitrarily-chosen unit distance, without the necessary presence of an intervening material medium to transmit the force. If two particles have gravitational masses of the same sign (i.e., both "positive" or both "negative"), the force which each exerts upon the other is one of attraction, that is, each particle tends to draw the other particle toward itself. In 1667 Isaac Newton deduced the mathematical law which specifies the magnitude of the mutual attraction between two bodies composed of elementary particles of the type I call "gravitrans," and arbitrarily designate as having "positive" gravitational masses. Newton's law is written

$$F = G \frac{Mm}{R^2}, \quad (1)$$

where  $M$  and  $m$  are the gravitational masses of the two bodies,  $R$  the distance between their centroids,\* and  $G$  a constant of proportion which is simply the strength of the force existing between two unit masses separated by unit distance.

We adopt the convention that when the force between two masses is positive, as in Eq. (1), it represents a mutual attraction of those masses. Now if we replace the "positive" masses  $M$  and  $m$  by "negative" gravitational masses  $-M'$  and  $-m'$  respectively, the Newtonian force between them is

$$F' = G \frac{(-M')(-m')}{R^2} = G \frac{M'm'}{R^2}, \quad (2)$$

which is still positive; thus we see that two masses of "levitrans," or "negative mass" particles, suffer a mutual attraction just as two "positive" masses do. However, if in (1) we reverse the sign of just one of the two masses — say if we replace  $m$  by  $-m'$  — the force between  $M$  and  $-m'$  becomes

$$F'' = G \frac{M(-m')}{R^2} = -G \frac{Mm'}{R^2}. \quad (3)$$

Here the negative sign on the right-hand side shows that the force is the opposite of an attraction; i.e., the two bodies concerned here exert a mutual repulsion on each other.

Now suppose we have two bodies, each comprising a mixture of gravitrans and levitrans bound together by non-gravitational forces (e.g., electrostatic or magnetic) sufficiently strong to keep these bodies from disintegrating under the mutual repulsions of their gravitationally opposite particles. Let body A contain a mass  $M$  of gravitrans and a mass  $-M'$  of levitrans, both types of particles being symmetrically distributed about a common center. Let body B consist of a similar symmetrical distribution of gravitrans and levitrans, the former of total mass  $m$  and the latter of total mass  $-m'$ . Let  $R$  be the distance between the centers of A and B. The total gravitational force between A and B will be the sum of the forces operating between each component-mass of A and each component-mass of B. Thus, pairing each component of A with each component of B, we obtain, by our preceding basic formulae (1), (2), and (3), the four partial forces:

$$F_{(M,m)} = G \frac{Mm}{R^2},$$

$$F_{(M,-m')} = -G \frac{Mm'}{R^2},$$

$$F_{(-M',m)} = -G \frac{M'm}{R^2},$$

$$F_{(-M',-m')} = G \frac{M'm'}{R^2},$$

where the subscripts in parentheses indicate the pair of mass-components concerned. The total gravitational force between A and B is the algebraic sum of these four partial forces, so that we have

$$\begin{aligned} F_{(A,B)} &= G \frac{Mm}{R^2} - G \frac{Mm'}{R^2} - G \frac{M'm}{R^2} + G \frac{M'm'}{R^2} \\ &= \frac{GM}{R^2} (m - m') - \frac{GM'}{R^2} (m - m') \\ &= G \frac{(M - M')(m - m')}{R^2}. \end{aligned} \quad (4)$$

This is the generalized Newtonian law of gravitation, applying to any two bodies, whatever their graviton-levitron compositions may be. We note that the first factor in parentheses,  $M - M'$ , is just the net or effective gravitational mass of body A, while the quantity  $m - m'$  is the net gravitational mass of body B. If either body is "pure," consisting only of particles of the same gravitational mass-sign, we simply set the opposite

\* The "centroid" of a body is the point at which its whole mass seems to be concentrated in any gravitational interaction with another body.

mass-component of that body equal to zero, and every term in the expanded form of (4) containing this component drops out of the equation. Thus we recover Eq. (1) by putting  $M' = 0$ ,  $m' = 0$ ; if we write  $M' = 0$ ,  $m = 0$  we get back (2), and by setting  $M' = 0$ ,  $m = 0$  we return to Eq. (3).

2

Let  $M$  be the positive mass of the earth's hollow shell on whose exterior surface we live, and let  $-M'$  be the mass of the inner sun that illuminates Pellucidar. Then the earth's effective gravitational mass which acts on any body outside the earth (or on the planet's outer surface) is  $M - M'$ . But, as has been pointed out often before, the earth's shell nullifies its own gravitational field everywhere within the hollow space inside the planet; hence the mass  $M$  is ineffective in Pellucidar and the only significant gravitational effects produced there are due to the mass  $-M'$  of the little sun at the planet's center. My previous article showed that, with the notable exception of the Dead World's revolution around the inner sun, the gravitational phenomena described by Innes could be nicely accounted for if the absolute value  $|-M'|$  of the inner sun's mass were equal to  $(3/4) \bar{M}$ . Accordingly we adopt this value here.

For the moment let us assume that the Dead World consists entirely of levitrons, of total mass  $-m'$ . The gravitational force with which it is attracted toward the central sun is then

$$F = G \frac{(-M')(-m')}{r^2} = G \frac{M' m'}{r^2}, \quad (5)$$

where  $r$  is the distance from the center of the sun to the center of the satellite. Since the Dead World has a radius of about 50 miles\* and its surface comes to within about a mile of Pellucidar (which has a radius of approximately 3500 miles), the value of  $r$  must be around 3450 miles, or say 5.55  $\times 10^6$  cm. Because of this attraction the Dead World would fall into the central sun, were it not for the centrifugal force of the satellite's revolution around that sun, which just counteracts the force given by Eq. (5).

Now the centrifugal force acting upon a circling body is not gravitational in nature. It is a so-called "inertial" force, and in computing its value we must employ not the body's gravitational mass, but its inertial mass.

The "inertial mass" of any fundamental particle we define as the absolute value of its gravitational mass. The absolute value of a quantity is always taken as a positive number. Thus if the gravitational mass of an individual graviton is  $\mu$ , its inertial mass is  $|\mu| = \mu$ ; if the gravitational mass of an individual leviton is  $-\mu$ , its inertial mass is  $|- \mu| = \mu$ , just as though it were a graviton. Therefore if a body contains a gravitational mass  $M$  of gravitons and a gravitational mass  $-M'$  of levitrons, its net or effective gravitational mass (which determines the strength of the gravitational force it exerts on another body) will be  $M - M'$ ; but its inertial mass (which determines the magnitude of the body's acceleration under an applied force) will be, not  $|M - M'|$ , but  $|M| + |-M'| = M + M'$ , as if its component levitrons were also gravitons.

The centrifugal force acting upon a body moving in a circular path is given by the body's inertial mass multiplied into the square of its orbital speed, and divided by the radius of the orbit. The Dead World, with gravitational mass  $-m'$ , has inertial mass  $|-m'| = m'$  and moves around the inner sun in a circular orbit of radius  $r$ . The circumference of the orbit is then  $2\pi r$ , and if it takes a time  $\tau$  for the little "moon" to make just one circuit, the satellite's orbital speed must be  $v = 2\pi r / \tau$ . By definition, then, the centrifugal force acting

on the Dead World is

$$f = \frac{|-m'|v^2}{r} = \frac{m'}{r} \cdot \frac{4\pi^2 r^2}{\tau^2} = \frac{4\pi^2 m' r}{\tau^2}. \quad (6)$$

The centrifugal force is directed outward from the center of revolution, while the gravitational force given in (5) is directed inward, toward that center. If the satellite is to remain in its orbit these two forces must be exactly balanced; that is, they must be equal. Hence

$$\frac{G M' m'}{r^2} = \frac{4\pi^2 m' r}{\tau^2}, \quad (7)$$

from which we can immediately solve for the square of the period  $\tau$ :

$$\tau^2 = \frac{4\pi^2}{G} \cdot \frac{r^3}{M'}. \quad (8)$$

We now substitute numerical values for the various quantities on the right:  $\pi = 3.14159$  or  $4\pi^2 = 39.4784$ , approximately;  $r = 5.55 \times 10^6$  cm, so  $r^3 = 1.7095 \times 10^{18}$  cm<sup>3</sup>. The value of  $G$  is  $6.67 \times 10^{-8}$  cm<sup>2</sup>/gm sec<sup>2</sup>.  $M'$  we have placed equal to  $(3/4) \bar{M}$ , and  $\bar{M}$  is known to be about  $5.974 \times 10^{27}$  grams, whence  $M' = 4.4805 \times 10^{27}$  gm. Thus

$$\begin{aligned} \tau^2 &= \frac{39.4784 \times 1.7095 \times 10^{18} \text{ cm}^3}{6.67 \times 10^{-8} \text{ cm}^2 \times 4.4805 \times 10^{27} \text{ gm}} \text{ gm sec}^2 \\ &= 22.58 \times 10^6 \text{ sec}^2 \quad (\text{approx.}). \end{aligned}$$

Extracting the square root, we obtain for the period of the Dead World's revolution around the sun:

$$\tau = 4.752 \times 10^3 \text{ sec} = 79.2 \text{ minutes.}$$

3

The foregoing result rests on the assumption that the Dead World is a pure mass of levitrons, like the inner sun. Since the gravitational force between these two bodies is one of attraction, their effective gravitational masses must be of the same sign. But this does not preclude the possibility that the Dead World may be a "mixed" body, comprising a positive mass  $m$  of gravitons and a negative mass  $-m'$  of levitrons, bound together in a coherent structure by strong internal electrical or other non-gravitational forces. The net gravitational mass of the satellite is then  $m - m'$ , and if  $|-m'| > m$  this net gravitational mass is negative, so the body will be attracted toward the central sun. If we therefore replace  $-m'$  in Eq. (5) by  $m - m'$ , the gravitational force between sun and satellite becomes

$$F = G \frac{(-M')(m - m')}{r^2} = G \frac{M'(m' - m)}{r^2} \quad (9)$$

which is positive (an attraction) as long as  $m' > m$ .

But now the total inertial mass of the Dead World is  $|-m'| + m = m' + m$ . This we can write in place of  $m'$  in Eq. (6), and if we put  $t$  for the satellite's period in its orbit of radius  $r$ , the centrifugal force acting on the little moon is

$$f' = \frac{4\pi^2 (m' + m) r}{t^2}. \quad (10)$$

This we equate to (9) to insure stability of the "moon" in its orbit:

$$\frac{G M' (m' - m)}{r^2} = \frac{4\pi^2 (m' + m) r}{t^2}, \quad (11)$$

\* As shown in "On Pellucidarian Geodesy," BB #19.

and solve for  $t^2$ :

$$t^2 = \frac{4\pi^2 r^3 (m' + m)}{G M (m' - m)} \quad (12)$$

Here we recognize the factor  $4\pi^2 r^3 / GM$  as the quantity  $\tau^2$  which we have already evaluated. Consequently we have

$$\left(\frac{t}{\tau}\right)^2 = \frac{m' + m}{m' - m} \quad (13)$$

From this equation it is clear that we can give  $t$  any value we please by a suitable choice of  $m$  and  $m'$ . Thus, we take  $t = 1$  sidereal day = 86,164 seconds, this being the time in which the earth-shell makes one complete rotation around the Pellucidarian sun. As  $\tau = 4752$  seconds, we have

$$t/\tau = 18.13, \text{ and } (t/\tau)^2 = 328.7, \text{ approximately.}$$

Consequently, from (13),

$$328.7(m' - m) = m' + m,$$

from which  $327.7 m' = 329.7 m$ , or

$$m' = 1.0061 m. \quad (14)$$

Thus we see that if the inertial mass of levitrons in the Dead World exceeds the inertial mass of gravitrons by about 0.61 percent of the latter -- that is, if the inertial mass of the Dead World consists of 50.152% levitrons and 49.848% gravitrons -- Pellucidar's pendent world will remain always over the same meridian on the inner world's surface.

Evidently this is the situation which actually obtains in Pellucidar. I feel therefore that in my previous discussion of the case I was grossly unfair to David Innes in suggesting that he was less than entirely truthful in recounting his experiences and observations to Edgar Rice Burroughs. I can only extend my embarrassed apologies to Mr. Innes, and my sincere assurances that henceforth I will endeavor to be more circumspect in my expressions of incredulity.



## The Mystery of Pellucidar's Pendent World

By Jack Elliott, Jr.

IN PELLUCIDAR, Edgar Rice Burroughs first introduced the "pendent world," the little "moon" of Pellucidar, which Innes tells us hangs only a mile above the high plains on the Earth's inner surface. By obstructing the light of the central sun, it produces the Land of Awful Shadow on the surface of Pellucidar. Using the scale of miles from the Pellucidar map in SAVAGE PELLUCIDAR, the Land of Awful Shadow seems to be about 300 miles wide; the Pendent World, being only a mile from Pellucidar and well over 3000 miles from the central sun, would have just about the same diameter as its shadow. Lacking a more precise figure, we shall say that the Pendent World is roughly 300 miles in diameter.

But that only one mile of space should separate the surface of the Dead World from Pellucidar is practically impossible. The gravitational pull of Pellucidar's surface area under the pendent world should cause the moon to fall, unless the central sun exerts an opposite gravitational pull as great as the earth's crust. (Put such great force between the central sun and the crust would cause the earth to collapse.) So I propose the theory that the "moon" is surrounded by a negative energy or anti-gravity field. In order to keep the Dead World balanced always at the same distance from Pellucidar's surface, the anti-gravity field between the inner moon and the earth's crust must be stronger than the field between the moon and the central sun, because it has to counteract the stronger gravitational pull of the crust on the pendent world.

In Chapter 5 OF LAND OF SWORDS David Innes says, "The atmosphere near the surface (of Pellucidar) is slightly denser than that of the outer crust because of centrifugence, but for the same reason it is much shallower than that of the exterior of the globe, with the result that it is extremely cold upon the heights of the higher mountains." If the pendent world has a diameter of 300 miles, then its highest point from Pellucidar must be in a vacuum, far above the Pellucidarian atmosphere. If it is to support life on its surface, the inner moon must have a fairly dense atmosphere of its own.

There seems no question that ERB intended to take David Innes to the Dead World at some time in the future, because he planned that world in great detail, as we can gather from these statements in PELLUCIDAR: "Above me hung another world. I could see its mountains and valleys, oceans, lakes, and rivers, its broad, grassy plains and dense forests. But too great was the distance and too deep the shadow of its underside for me to distinguish any movement of animal life."

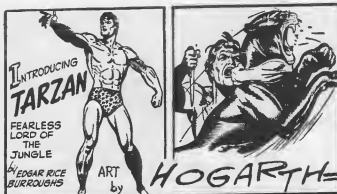
"...Was it inhabited?"

"...Were its people as relatively diminutive as their little world, or were they as disproportionately huge as the lesser attraction of gravity upon the surface of their globe would permit their being?"

My own guess would be that Burroughs intended to populate the Pellucidarian "moon" with relatively tiny creatures; of course it would have to be inhabited by humans, and perhaps by some fantastically intelligent non-human race. But would Innes find himself in a world of very small people, or would he, in being transported to the Dead World, shrink in size according to the theory of "compensatory adjustment of masses," as John Carter did when he visited Thuria in SWORDS OF MARS? The Zodangan scientist Fal Sivas theorized that this compensatory relation exists only between Barsom and her satellites; but for all we know it might be equally true of Pellucidar and its little moon.

Why didn't Burroughs ever send Innes on an adventure trip to Pellucidar's moon? Certainly the suggestion must have occurred to him while writing PELLUCIDAR; but during the 18 years that passed between PELLUCIDAR and TANAR OF PELLUCIDAR, the idea of a "pendent world" story seems to have become forgotten.





It is a little known fact that Berne Hogarth did actually work on the daily Tarzan strip for a brief period of time during the winter of 1947-48. Tarzan strips #2509 thru #2543, covering a six week episode retelling ERB's AT THE EARTH'S CORE, are all signed by Hogarth with the exception of a few. Mr. Hogarth claims he never worked on the daily strips except to pencil them...then he would dole them out to be inked by other artists. One of the artists, Al Williamson, claims that he would ink in Hogarth's name on the strips where Hogarth had signed them in pencil. Well, here are the daily strips in question. Certainly Hogarth's penciling and style shows through in the finished product. Maybe some of you can spot Williamson's fine lines and the work of Dan Barry...but the fact remains these are Hogarth dailies.





AS THE SLOTH REACHED FOR PERRY, A GIANT SABER-TOOTH TIGER LEAPED FROM THE UNDERBRUSH TO THE SLOTH'S BACK.



THE RELEASED TIGERS SNAPPED PERRY OFF INTO THE UNDERBRUSH; AND AS THE GREAT BEASTS FOUGHT IN SAVAGE FURY, INNES DROPPED TO THE GROUND.



"ARE YOU HURT, PERRY?" INNES ASKED. "NO," PERRY REPLIED. "THE MOLE, DAVID! IT'S OUR ONLY PROTECTION FROM THESE AWFUL BEASTS!"



IN A CLEARING, THEY WERE SUDDENLY SURROUNDED BY A SWARM OF GORILLA-LIKE MEN ARMED WITH SPEARS AND HATCHETS.



"LOOK, PERRY," INNES EXCLAIMED. "HUMAN BEINGS - LIKE OURSELVES!"



BUT AS THEY CAME CLOSER, THEY SAW THAT THE PEOPLE WERE CHAINED NECK TO NECK IN A LONG LINE.



AS GRIDLEY PAUSED TO RELIGHT HIS PIPE, TARZAN ASKED, "WHAT HAPPENED TO INNES AND PERRY?"



"THEY WERE CHAINED AT THE END OF THE LINE," GRIDLEY CONTINUED, "AND THE INTERRUPTED MARCH WAS RESUMED TOWARD A DISTANT MOUNTAIN RANGE."



IN PELLUCIDAR, WHERE THE SUN HANGS CONSTANTLY AT ZENITH AND IT IS ALWAYS MIDDAY, TIME IS MEASURED IN "SLEEPS."



IT WAS ONLY AFTER MANY "SLEEPS" WHEN INNES HAD PICKED UP MUCH OF THE LANGUAGE OF HIS FELLOW-CAPTIVES, THAT HE ...



... BECAME ACUTELY AWARE OF HOOJA'S BOLD ADVANCES TOWARD DIAN, WHO TRIED TO IGNORE THEM.



"WHEN HOOJA SPEAKS," HOOJA SNARLED, "DIAN WILL ANSWER! OR DOES SHE THINK HERSELF TOO GOOD?"



BEFORE HOOJA COULD SAY MORE, INNES DROPPED HIM WITH A HARD RIGHT TO THE JAW.



FOR A LONG MOMENT, DIAN STOOD IN SILENCE WITH FACE AVERTED, FLUSHING, EXPECTANT, THEN SUDDENLY HER CHEEKS WENT WHITE, AS INNES WAS ABOUT TO SPEAK, SHE TURNED HAUGHTILY AWAY. "I HATE YOU!" SHE SAID COLDLY.



DURING THE MANY MARCHES FOLLOWING, DIAN WAS AS ALOOF AS SHE HAD BEFORE BEEN FRIENDLY, AND INNES DETERMINED, DURING THE NEXT STOP, TO LEARN HOW HE HAD OFFENDED HER.



THE ROUGH TRAIL LED INTO THE MOUTH OF A GREAT, NATURAL TUNNEL BLACK AS NIGHT.



"THEY CREEPT THROUGH THE BLACKNESS OF THE LONG, ROUGH TUNNEL," GRIDLEY CONTINUED, "AT A SNAIL'S PACE, AND AT LAST"



"HOW DID THE GLAKS ESCAPE?" THE LEADER DEMANDED. "SPEAK, OR I KILL!"



"THE LOCKS HAVE BEEN PICKED," INNES POINTED OUT. "IT IS THE WORK OF HOQJA, THE SLY ONE!" COMMENTED GHAK.

2518



"THOSE TOWERS MARK THE ENTRANCE TO PHUTRA," GHAK EXPLAINED. "THE UNDERGROUND CITY OF THE MAHARS, AND OUR DESTINATION."



"IT IS DECREED," THE SAGOTH TRANSLATED, "THAT THE OLD ONE SHALL BE SENT TO THE HALL OF ARCHIVES. YOU OTHERS TO THE ARENA!"



"WHAT DOES IT MEAN, GHAK," INNES ASKED, "TO BE SENT TO THE ARENA?" "THAT WE HAVE ONE CHANCE IN A THOUSAND," GHAK REPLIED. "TO LIVE!"



"SOMEHOW," INNES SUGGESTED, "WE MUST TRY TO ESCAPE." GHAK SHOOK HIS HEAD. "FROM PHUTRA AND THE MAHARS THERE IS NO ESCAPE!"



THE MAHARS HAVE NO EARS OR SPOKEN LANGUAGE. THEY CONVERSE BY SIGNS. PRESENTLY," GHAK MURMURED, "WE WILL KNOW OUR FATE!"



"GHAK!" INNES EXCLAIMED, "ARE WE TO FIGHT THAT BRUTE?" "YES," GHAK NODDED, "IF WE WISH TO LIVE. BUT—LOOK, DAVID INNES!" "A SABER-TOOTH!" INNES GASPED. "THE THAG WE MIGHT HAVE KILLED," GHAK SAID CALMLY, "BUT THAG AND TARAG TOGETHER—WE ARE DOOMED, DAVID!"



BELLOWING SAVAGELY, THE GREAT BULL APPROACHED FROM ONE SIDE AS—



"GREAT SCOTT!" INNES GASPED. "THESE THINGS ROAMED THE EARTH A MILLION YEARS AGO!"



BELLOWING AND ROARING SAVAGELY, THE GREAT BEASTS CHARGED SIMULTANEOUSLY!



AT THE VERY MOMENT THAT THE BEASTS WERE UPON THEM, GHAK GRASPED INNES BY THE ARM AND TOGETHER THEY LEAPED ASIDE. AS IT LEAPED UPON THE BULL, THE TIGER IMPALED ITSELF UPON THE GREAT HORNS. THE BULL LOWERED ITS HEAD AND PINNED THE GREAT CARNIVORE TO THE GROUND.

2521



REALIZING THE BLINDED BULL TO BE THE LEAST FORMIDABLE ENEMY GHAK LEAPED IN AND THRUST HIS SPEAR THROUGH THE SABER-TOOTH'S HEART.



"THE THAG HAS BEEN BLINDED, DAVID!" GHAK CRIED. "GIVE ME YOUR SPEAR AND LEAVE HIM TO ME!"



WITH ALL HIS GREAT STRENGTH, GHAK WHIRLED THE SPEAR INTO THE BULL'S LEFT SIDE.

2522



"COME!" ORDERED THE GOZLA—MAN. "THE INVESTIGATORS AWAIT YOU!"



"WE HAVE WON OUR FREEDOM, DAVID!" GHAK RUMBLED. "THE MAHARS LIBERATE THOSE WHO REMAIN ALIVE IN THE ARENA AFTER THE BEASTS ARE KILLED!"



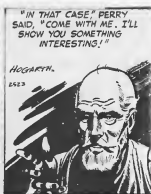
"YOU GO TO THE HALL OF ARCHIVES TO LABOR," THE SAGOTH TRANSLATED; "AND LATER TO THE PITS FOR VIVISECTION BY THE LEARNED ONES!"



"THANK HEAVEN, YOU ESCAPED DEATH, DAVID!" CRIED PERRY. "THEY TOLD ME YOU WOULD BE KILLED IN THE ARENA."  
"A TEMPORARY RESPITE, PERRY," INNES REPLIED. "IT APPEARS SOON I GO TO THE VIVISECTION PITS."



"I THOUGHT WE HAD WON OUR FREEDOM," SAID INNES. "IT IS CUSTOMARY," GHAK REPLIED, PUZZLED. "I CANNOT ACCOUNT FOR THE CHANGE."



HOGARTH.  
2523



"SLAVE-TUNICS AND WELCOME," PERRY POINTED OUT. "DISGUISE AND ARM YOURSELVES."



"I BELIEVE IT LEADS TO THE LOWER LEVELS," PERRY SAID. "HOWEVER IT'S A POSSIBLE AVENUE OF ESCAPE."



"THE PASSAGE IS DARK," PERRY EXPLAINED. "FASTENED TOGETHER, THERE'S NO DANGER OF OUR LOSING EACH OTHER."



"FOR A LONG TIME," GRIDLEY CONTINUED. "THEY CREEPT THROUGH THE DARK PASSAGE THAT LED EVER DOWNWARD, AND THEN, ABRUPTLY—"



"THEY CAME OUT INTO A STOREROOM SOMEWHERE BENEATH THE CITY," GRIDLEY CONTINUED.



THE SAGOTH, ABSORBED IN HIS WORK OF MIXING POWDERS AND LIQUIDS, HEARD NOTHING AS THE FUGITIVES CREEPT TOWARD HIM.



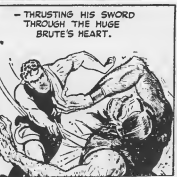
AS GHAK ROSE DIRECTLY BEHIND THE SAGOTH, THE GREAT BRUTE PAUSED IN HIS WORK AND RAISED HIS EYES!



SENSING DANGER, THE SAGOTH TURNED WITH A SNARL.



AS THE SAGOTH POUNCED UPON GHAK, INNES THRUST PERRY ASIDE AND LEAPED IN—



—THRUSTING HIS SWORD THROUGH THE HUGE BRUTE'S HEART.



DROPPING GHAK, THE SAGOTH FELL TO THE FLOOR WITH A GROAN. INNES, SWORD READY, STOOD OVER HIM.



"BEING A FEMALE RACE," PERRY SAID, "THE MAHARS DEPEND UPON ARTIFICIAL PROPAGATION..."



"...THIS BOOK CONTAINS THE FORMULA FOR THAT PROCESS." WE'LL TAKE IT WITH US," PERRY CONTINUED, "AND EVENTUALLY THE MAHARS WILL CEASE TO EXIST."

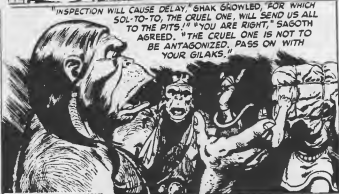


WITH THE SKINS HIDING THEIR FACES, INNES FELT THAT GHAK, AS A GUARD, MIGHT GET THEM THROUGH...



UNMOLESTED, THEY MOVED THROUGH THE BUSY CROWD TO THE FOOT OF THE STAIRWAY LEADING UP TO THE OPEN PLAIN.

"INSPECTION WILL CAUSE DELAY," GHAK SHOWLED, FOR WHICH SOL-TO-TO, THE CRUEL ONE, WILL SEND US ALL TO THE PITS!" "YOU ARE RIGHT," SAGOTH AGREED. "THE CRUEL ONE IS NOT TO BE ANTAGONIZED, PASS ON WITH YOUR GILAKS."



FOR MANY SLEEPS THEY HURRIED ON, THEIR ONE THOUGHT TO PUT AS MUCH DISTANCE BETWEEN THEMSELVES AND PHUTRA AS POSSIBLE. DURING THEIR LONG FLIGHT, INNES HAD FASHIONED A CRUDE BOW-AND-ARROWS WITH WHICH HE SUPPLIED THE PARTY WITH MEAT.



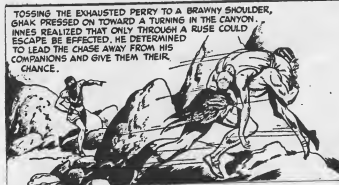
"CAN WE MAKE SARI IN TIME?" INNES ASKED. "WE MAY," GHAK REPLIED; "BUT THE SAGOTHS ARE TIRELESS AND MOVE WITH INCREDIBLE SPEED."



"GO ON, GHAK, AND WARN YOUR PEOPLE. PERRY AND I WILL MAKE IT," INNES GASPED. "I WILL NOT DESERT A COMPANION," GHAK REPLIED AS HE GLANCED AT THE STAGGERING PERRY.



TOSSEING THE EXHAUSTED PERRY TO A BRAWNY SHOULDER, GHAK PRESSED ON TOWARD A TURNING IN THE CANYON. INNES REALIZED THAT ONLY THROUGH A RUSE COULD ESCAPE BE EFFECTED. HE DETERMINED TO LEAD THE CHASE AWAY FROM HIS COMPANIONS AND GIVE THEM THEIR CHANCE.



"WHERE BOUND, FRIEND," THE SAGOTH DEMANDED. "WITH THESE SLAVES?" "THE NEARBY CITY OF LUTHO," GHAK REPLIED GRUFFLY.



"THE BUNDLES ARE LARGE, FRIEND," THE SAGOTH SAID, PLACING A HAND ON PERRY'S BURDEN. "I WOULD INSPECT THEM."



"ANY SIGN OF PURSUIT?" INNES MUTTERED. "NONE," GHAK REPORTED; "BUT THERE WILL BE SOON—WHEN THEY FIND US MISSING."



DUE TO THE HEAT AND THE WEIGHT OF THE HIDES, PERRY WAS ALMOST EXHAUSTED. "WE'RE CLOSE TO THE JUNGLE," INNES SAID. "WE'LL REST THERE."



"THOSE ARE THE HILLS OF SARI, MY COUNTRY," GHAK SAID. "THERE, MY PEOPLE, YOU WILL BE SAFE."



"THE SAGOTHS COME, DAVID!" GHAK EXCLAIMED. "THEY NEVER GIVE UP UNLESS TURNED BACK BY A LARGER FORCE."



THOUGH THEIR PURSUERS WERE NOT YET VISIBLE, THEIR TRIUMPHANT YELLS WERE FAINTLY AUDIBLE, AND INNES KNEW THEY HAD BEEN SIGHTED. "I CAN'T MAKE IT, DAVID," PERRY GASPED. "GO ON, YOU TWO. THERE'S NO REASON FOR US ALL TO BE RE-TAKEN."

AS GHAK AND PERRY DISAPPEARED UP THE LEFT-HAND CANYON, INNES PAUSED TO AWAIT THE FOREMOST SAGOTH.



INNES' RUSE WORKED AND PRESENTLY THE ENTIRE PARTY OF SAGOTHS RUSHED HEADLONGS AFTER HIM UP ONE CANYON; WHILE GHAK BORE PERRY TO SAFETY UP THE OTHER.





REALIZING THAT HE COULD NOT OUT-DISTANCE THE FOREMOST SAGOTH, INNES FITTED AN ARROW TO HIS BOW AS HE RAN. A HEAVY SPEAR GRAZED INNES' HEAD, AS A SAGOTH, WITH AN ARROW THROUGH HIS HEART, TELL DEAD AT INNES' FEET.



AS INNES BROUGHT DOWN ANOTHER GORILLA-MAN, THE THIRD TURNED BACK TO ANAY THE MAIN BODY.



UTTERLY EXHAUSTED INNES STUMBLED ON TOWARD THE TOP OF THE PASS.

WHAT LAY BEYOND THE END OF THE TRAIL FOR HIM, OR SAFETY?



HOPING TO FIND SANCTUARY BEYOND, INNES FOLLOWED THE LEDGE WHICH ROUNDED THE OVERHANGING CLIFF.



A FEW YARDS BEYOND THE SHOULDER OF THE CLIFF THE LEDGE ENDED ABRUPTLY AND INNES REALIZED HE WAS TRAPPED



SOMETHING URSED INNES TO HIDE THE MAHAR FORMULA OF PROPAGATION. HE CLIMBED INTO THE MOUTH OF THE CAVE BESIDE HIM AND—



—HID THE GREAT SECRET OF THE MAHARS IN A DEEP NICHE AT THE BACK OF THE LITTLE CAVE.



LEAVING THE CAVE, INNES FITTED AN ARROW TO HIS BOW AND ANAYED THE ADVANCE OF THE SAGOTHS. AS THE ADVANCING SAGOTHS SAW INNES, THEY LEAPED ALONG THE LEDGE TOWARD HIM.



AS INNES LOOSED HIS ARROW, A SAGOTH DROPPED ON HIM FROM ABOVE AND BORE HIM TO THE GROUND.



HELPLESS IN THE GRASP OF THE BRUTE BEHIND HIM INNES BELIEVED THAT HIS LAST MOMENT HAD COME.



"IF YOU TRY TO ESCAPE," GROWLED THE SAGOTH, "YOU WILL DIE. WE RETURN NOW TO PHUTRA."



THIS BEGAN THE LONG, WEARY MARCH BACK TO CERTAIN DEATH IN THE ARENA OR THE VIVISECTION PITS OF PHUTRA.



AFTER MANY SLEEPS, INNES AGAIN FOUND HIMSELF A PRISONER IN THE BURIED CITY OF PHUTRA. AND SO, INNES FACED THE MAHAR TRIBUNAL, AWAITING THEIR DECISION. WHAT WOULD IT BE—

DEATH IN THE ARENA, OR BY VIVISECTION?



WHERE IS THE SECRET BOOK YOU TOOK FROM THE LABORATORY? THE SAGOTH DEMANDED. "IN A SAFE HIDING PLACE FAR FROM HERE," INNES REPLIED.



"THE MAHARS WILL RELEASE YOU FOR THE RETURN OF THE GREAT SECRET," SAID THE SAGOTH.

"NO!" INNES REPLIED BRIVELY, WITH A HEAVY HAND. THE CHIEF SAGOTH ROUGHLY PUSHED INNES OUT OF THE AUDIENCE-CHAMBER.



"UNTIL YOU AGREE TO RETURN THE BOOK," THE SAGOTH GROWLED—

—"YOU REMAIN HERE, NEVER KNOWING WHEN YOU WILL BE PLACED ON THAT TABLE!"

"AT THAT POINT," GRIDLEY CONCLUDED HIS TALE, "THE SENDING FADED OUT. IT WAS THE LAST WORD I HAD FROM PELLUCIDAR."



"WE HAVE TALKED LONG," TARKAN SAID. "TODMORROW I WILL TAKE YOU TO DR. FRANKLIN."



FOUR DAYS OF FORCED MARCHES BROUGHT THEM TO THEIR DESTINATION-THE JUNGLE LABORATORY OF DR. DANA FRANKLIN.



"AND THERE'S THE MOLE!" DR. FRANKLIN SAID, INDICATING HIS INVENTION, "EQUIPPED AND READY FOR THE TRIAL."

2539

HOGARTH

"IF THERE IS ROOM FOR ME," SAID TARZAN, "I'LL LIKE TO JOIN YOU." "PLENTY OF ROOM!" FRANKLIN ASSURED HIM ENTHUSIASTICALLY. "WE HOPED YOU WOULD ACCOMPANY US."



LATE THAT NIGHT THE VENTURESOME EXPLORERS STRAPPED THEMSELVES INTO THEIR SEATS PREPARATORY TO BEGINNING THE TRIP TO THE EARTH'S CORE.



AS DR. FRANKLIN SLOWLY PULLED THE STARTING LEVER TOWARD HIM, THE ATTEMPT TO REACH THE INNER WORLD OF PELLUCIDAR, FIVE HUNDRED MILES BENEATH THE EARTH'S SURFACE, BEGAN.



"SEVEN MILES AN HOUR!" TARZAN EXCLAIMED, "HOW THICK IS THE EARTH'S CRUST?" HE ASKED.

"ACCORDING TO PERRY," FRANKLIN REPLIED, "ABOUT 500 MILES!"



"408 MILES!" FRANKLIN EXCLAIMED. "IF PERRY IS CORRECT, WE SHOULD BE THROUGH THE CRUST IN 14 HOURS." "THE OXYGEN WON'T LAST OVER TWELVE!" TARZAN REPORTED.

HOURS LATER DORIS WHISPERED, "I-I CAN'T BREATHE!" "DOCTOR!" GRIDLEY GASPED. "OXYGEN! THE TANK-EMPTY!"



"SHE'S UNCONSCIOUS," GRIDLEY GASPED. "WITHOUT OXYGEN WE'RE ALL DONE FOR!"



"FOUR HUNDRED NINETY-FIVE MILES!" TARZAN MUTTERED. "GOD!" FRANKLIN GASPED. "IF ONLY PERRY WERE RIGHT!"



"FIVE HUNDRED MILES!" GASPED TARZAN. "I'M SORRY, TARZAN," FRANKLIN WHISPERED AS HE FELL BACK. "PERRY-WAS-WRONG!" WITH HIS LAST REMAINING STRENGTH, TARZAN WRENCHED AT THE OXYGEN TANK VALVE. A FAINT HISS, SILENCE, AND THE METER READ, "EMPTY."



SUDDENLY, THE HUGE MACHINE STOPPED. THE DISTANCE METER READ, "503 MILES" THROUGH THE VENTILATOR, FRESH AIR POURED INTO THE CABIN. "TARZAN!" DR. FRANKLIN EXCLAIMED, BREATHING DEEPLY. "IT'S AIR! WHERE ARE WE?"



AS TARZAN TURNED TO OPEN THE DOOR, FRANKLIN LEANED OVER DORIS. "THANK HEAVEN!" HE MUTTERED. "SHE MERELY FAINED."



FROM THE DOORWAY OF THE MOLE, THE ADVENTURERS GAZED IN SILENT AWE AT THE PRIMEVAL BEAUTY OF HORIZONLESS PELLUCIDAR.

